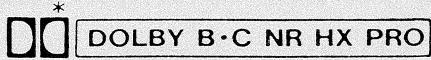


Service Manual



- * HX Pro headroom extension originated by Bang Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.
“DOLBY”, the double-D symbol, and “HX PRO” are trademarks of Dolby Laboratories Licensing Corporation.

MECHANISM SERIES: AR350

SPECIFICATIONS

■ CASSETTE DECK SECTION

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Heads	
Rec/play	Permalloy head
Erasing	Double-gap ferrite head
Motors	
Capstan	Quartz direct drive DC motor
Reel table drive	DC motor
Recording system	AC bias
Bias frequency	80 kHz
Erasing system	AC erase
Tape speed	4.8 cm/sec. (1 7/8 ips)
Frequency response	
NORMAL	20 Hz~18 kHz
CrO ₂	20 Hz~16 kHz (DIN)
METAL	20 Hz~18 kHz
	20 Hz~17 kHz (DIN)
	20 Hz~19 kHz
	20 Hz~18 kHz (DIN)
S/N (signal level= max recording level, CrO ₂ type tape)	
Dolby C NR on	74 dB (CCIR)
Dolby B NR on	66 dB (CCIR)
Dolby NR off	56 dB (A weighted)

S/N (signal level = max recording level, CrO₂ type tape)

Dolby C NR on
Dolby B NR on
Dolby NR off

Wow and flutter 0.05% (WRMS)
±0.15% (DIN)

Fast forward and rewind times Approx. 90 seconds with C-60 cassette tape

Input sensitivity and impedance

MIC 0.25 mV/400 Ω ~10 k Ω
LINE 60 mV/47 k Ω

Output Voltage and Impedance LINE

LINE 400 mV/800Ω
HEADPHONES 125 mV/8Ω
 (8Ω~600Ω)

■ GENERAL

Power consumption

Power supply

For Great Britain AC 240V, 50/60Hz

For others AC 220V, 50/60Hz
100W, 110W, 130W, 150W, 180W, 200W, 220W

Dimensions (W × H × D)

$$(16\frac{15}{16}'' \times 5\frac{1}{8}'' \times 11\frac{13}{32}'')$$

Weight 4.9kg (10.8lb.)

Note:

4.9 kg (10.8 lb.)

Specif

Weight and dimensions are approximate.

Technics

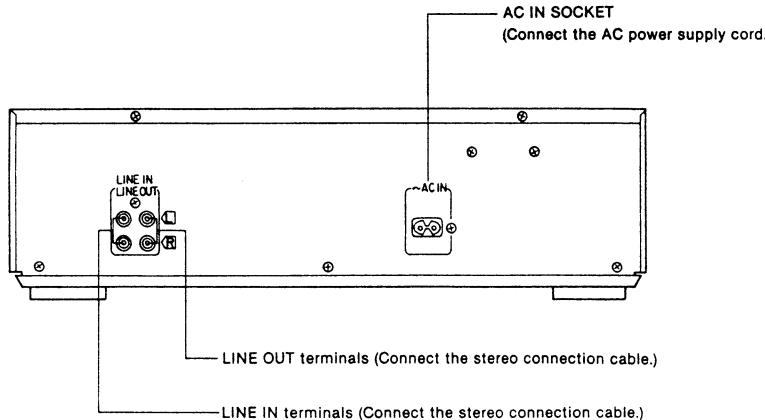
Matsushita Electric Industrial Co., Ltd.

Central P.O. Box 288, Osaka 530-91, Japan

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■ CONNECTIONS

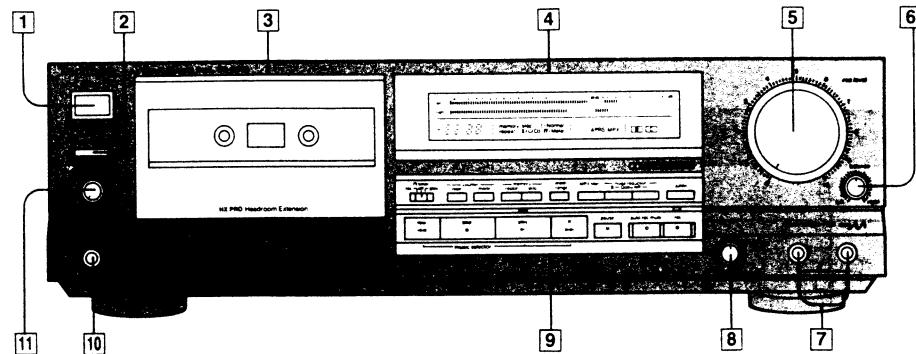


■ ACCESSORIES

• Stereo connection cables.....	2
[SJP2249-3]	

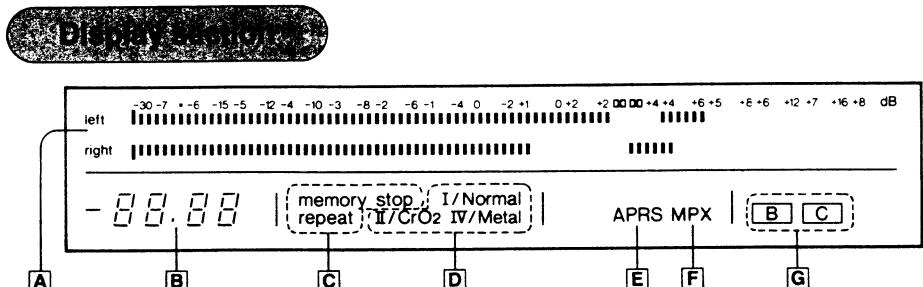
• AC power supply cord.....	1
[SFDAC05E03: (E, E5, EG) SJA193-1: (EB)]	

■ FRONT PANEL CONTROLS AND FUNCTIONS



- 1 **Power "standby () /on" switch (power "standby () /on")**
This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby()" position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.
- 2 **Eject button (▲eject)**
This button can be used to open the cassette holder.
- 3 **Cassette holder**
- 4 **Display section**
- 5 **Recording-level control (rec level)**
This control can be used to regulate the recording level and the peak level.

- 6 **Recording-balance control (balance)**
Use this control to balance the left and right sound levels during recording.
- 7 **Microphone jacks (mic)**
- 8 **Bias-adjustment control (bias adjust)**
The frequency response for each tape type can be equalized by using this control.
- 9 **Operation section**
- 10 **Headphones jack (phones)**
- 11 **Headphones volume control (phones level)**



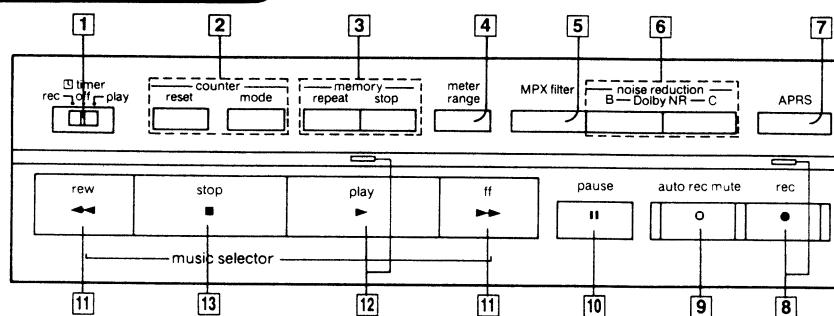
- A **Input level meter (peak level)**
During playback, this meter indicates the level of the recorded sound.
During recording, it indicates the level being recorded, adjusted by the recording-level control.
- B **Tape/Linear counter**
Indicates the amount of tape movement or elapsed time.
- C **Memory-mode Indicators (memory stop/repeat)**
Each indicator illuminates to show which of the memory mode was set by the memory-mode buttons.
- D **Tape-select indicators**
The type of tape being used will be automatically detected and the indicator will illuminate.

E APRS indicator (APRS)

Illuminates to indicate that the "APRS" is set to "on" in the recording stand-by mode.

F Multiplex filter indicator (MPX)

Illuminates to indicate that the multiplex filter is set to "on".

**1 Timer switch (rec timer)**

This switch is used to automatically begin a tape recording or tape playback at a certain time, selected by a timer (not included).

2 Counter buttons (counter reset mode)

mode: This button can be used to select the tape/linear counter indication.

reset: This button can be used to reset the tape/linear counter indication to "0000".

3 Memory-mode buttons (memory repeat/stop)

stop: This button can be used to rewind the tape to the preset "0000" point when the rewind (◀◀) button is pressed.

repeat: This button can be used to set this unit to the "A-B repeat" mode.

4 Meter-range selector (meter range)

This selector can be used to select the meter-range display of the input level meter.

5 Multiplex filter switch (MPX filter)

This switch can be used during the recording of an FM stereo broadcast that employs Dolby noise reduction so as to prevent misoperation of the Dolby noise reduction.

6 Dolby noise-reduction buttons (noise reduction)

These buttons are used to reduce the hissing noise heard from the tape. This unit is provided with both the B-type and C-type noise-reduction systems.

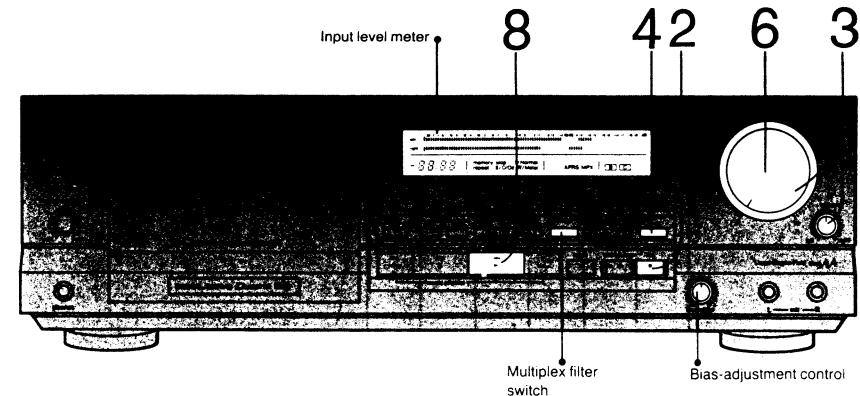
7 APRS button (APRS)

This button can be used to hold the peak level while monitoring the input sound.

The "APRS" can only be used in the recording stand-by mode.

G Dolby noise-reduction indicators (B, C)

Each indicator illuminates to show the type of Dolby noise-reduction system selected by pressing one of the Dolby noise-reduction buttons.

RECORDING WITH HIGH TONE QUALITY**APRS function**

Because the dynamic range of cassette tape is narrower than the dynamic range of a digital source, the recording will be too noisy if the recording level setting is too low, and, conversely, the recorded sound will be distorted if the setting is too high.

It was for this reason that it has always been recommended that the signals to be recorded be first (before recording) input to the cassette deck and the recording level then be set while watching the level meter, but, for former conventional level meter equipped with the peak-hold function, it was necessary to re-adjust and input the signals again if the level setting was too high or too low.

This unit, however, is equipped with the **APRS: Advanced Precise Recording-level System**, which holds and displays the maximum peak of the input signal level, so that once the peak level of the source is held, there is no necessity to re-input the source signals, and the optimum recording level can be set.

•The APRS function can be used only during the recording-standby mode.

1 Prepare for recording as described in steps 1 to 6 of the "Recording" section.

2

Press the record button.

(The recording indicator will illuminate and the playback indicator will flash continuously; the unit will be in the recording stand-by mode.)

3

rec level/balance

Set the recording-level control and the recording-balance control to the suitable position for the sound source.

4

Press the APRS button.

(The APRS indicator will illuminate.)

5 Play the sound source to be recorded, from beginning to end.

[The peak level (the highest level of the input signal) of the sound source will be displayed and held on the input-level meter.]

Input level meter



Peak level

Note:

The range within which the peak level can be held is -8 dB to +16 dB. Note that the APRS indicator will flash continuously if the peak level of the sound source is input at a level that exceeds the maximum recording level (+16 dB).

If that happens, press the APRS button to cancel the APRS function, and then reset the recording level and set the APRS once again.

Also note that the peak level cannot be held to less than -8 dB.

6 rec level

Using the recording-level control, adjust the peak level to the desired setting.

The peak level will move to the right when the recording-level control is turned to the right, and will move to the left when the recording-level control is turned to the left.

•The recording-balance control cannot be used to adjust the peak level.

7

Begin playing the sound source from the beginning once again.

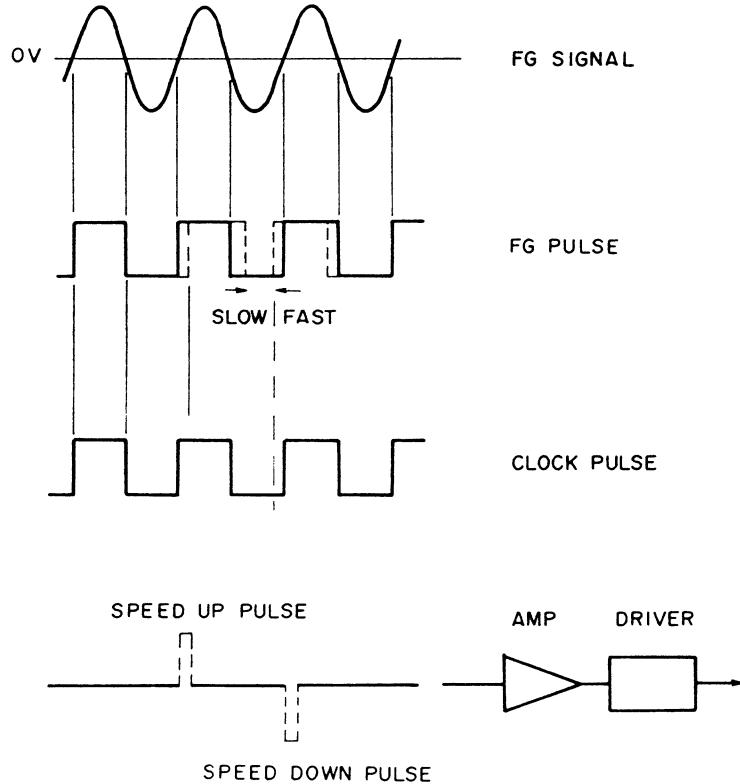
8 play

Press the playback button.

(The playback indicator will illuminate steadily, and the recording will begin.)

■ OUTLINE OF THE DIRECT DRIVE MOTOR SYSTEM

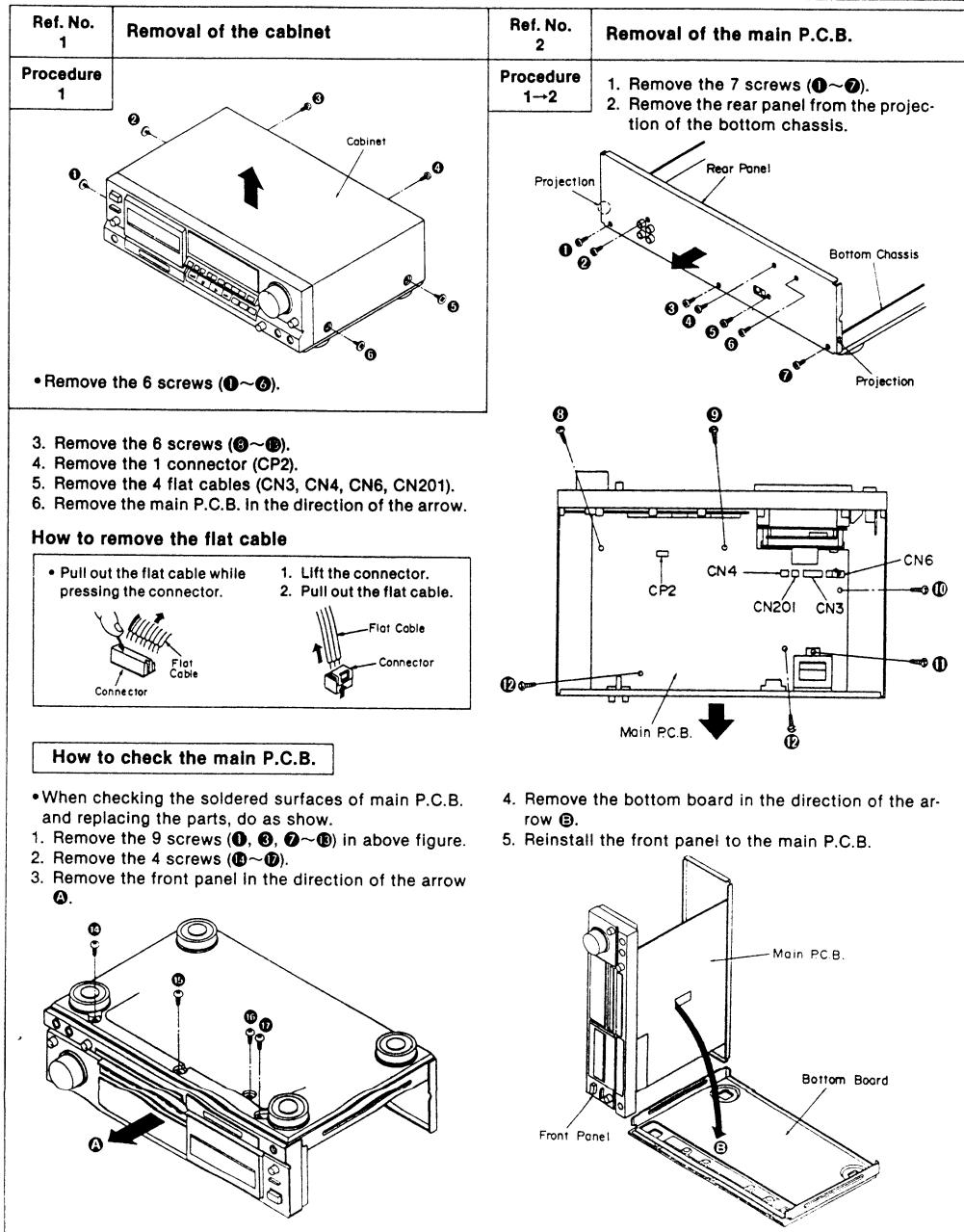
The capstan motor is actuated by the DD motor digital servo system. The FG pulse is generated after the detection of the zero crosspoint, and the reference signal generated from the quartz oscillator is compared with this FG pulse. From this comparison, the accelerated and reduced speed pulses are generated, causing the driving coil to function.

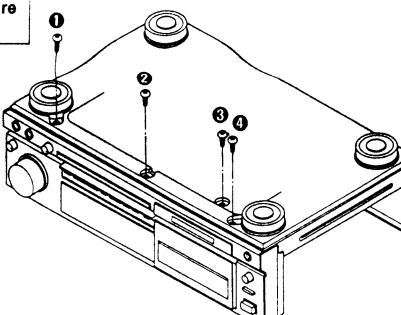
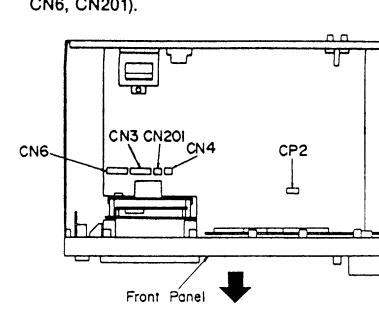
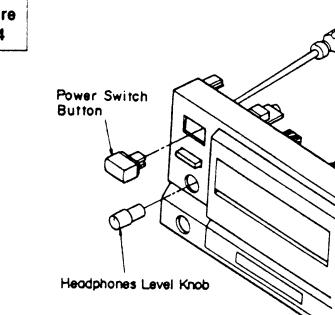
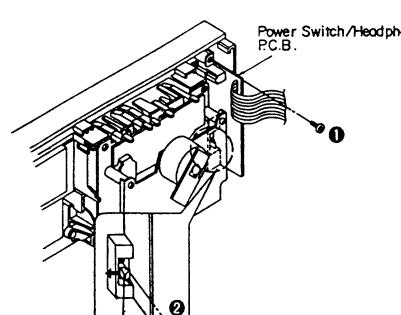
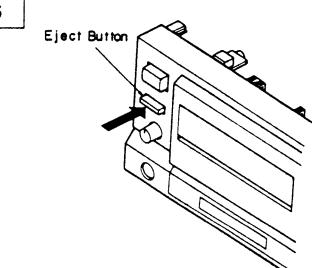
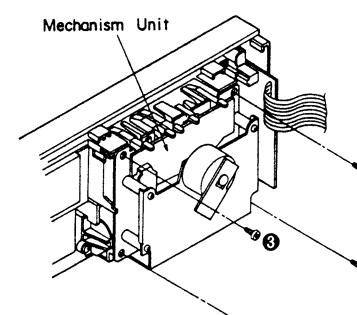


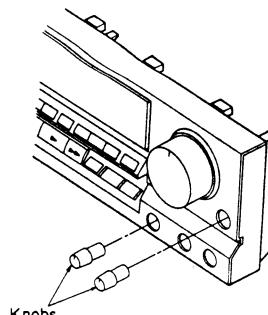
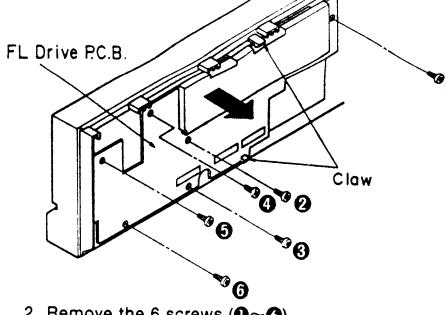
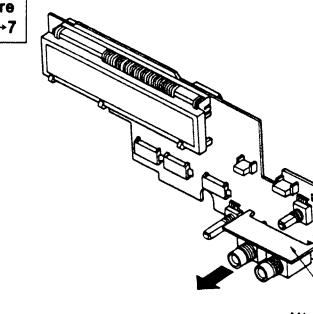
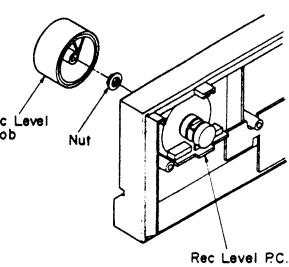
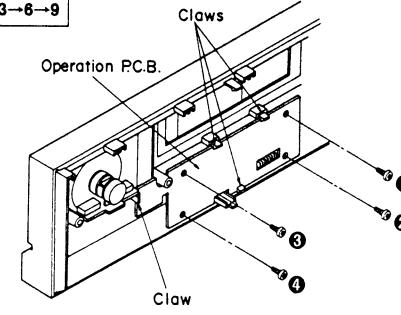
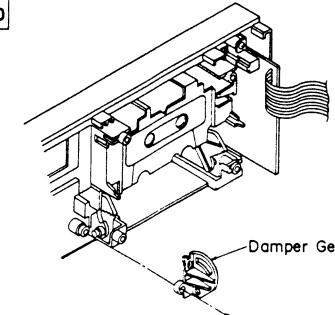
■ DISASSEMBLY INSTRUCTIONS

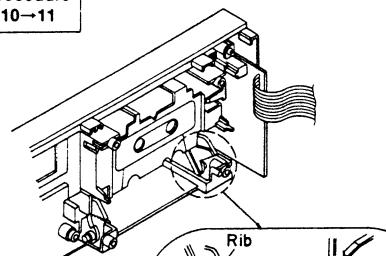
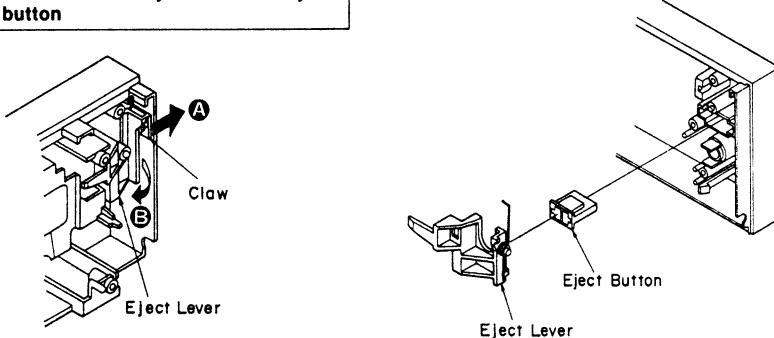
"ATTENTION SERVICER"

Some chassis components may have sharp edges. Be careful when disassembling and servicing.



Ref. No. 3	Removal of the front panel
Procedure 1→3	 <p>1. Remove the 4 screws (1~4).</p>
	<p>2. Remove the 1 connector (CP2). 3. Remove the 4 flat cables (CN3, CN4, CN6, CN201).</p>  <p>4. Remove the front panel in the direction of the arrow.</p>
Ref. No. 4	Removal of the power switch/ headphones P.C.B.
Procedure 1→3→4	  <p>1. Remove the power switch button by pushing it from behind the front panel. 2. Pull out the headphones level knob. 3. Remove the 2 screws (1, 2). 4. Release the 1 claw.</p>
Ref. No. 5	Removal of the mechanism unit
Procedure 1→3→5	  <p>1. Push the eject button. 2. Remove the 4 screws (1~4).</p>

Ref. No. 6	Removal of the FL drive P.C.B.
Procedure 1→3→6	  <p>1. Pull out the 2 knobs. 2. Remove the 6 screws (1~6). 3. Release the 2 claws. 4. Remove the FL drive P.C.B. in the direction of the arrow.</p>
Ref. No. 7	Removal of the mic jack P.C.B.
Procedure 1→3→6→7	 <p>• Remove the mic jack P.C.B. In the direction of the arrow.</p>
Ref. No. 8	Removal of the rec level P.C.B.
Procedure 1→3→6→8	 <p>1. Pull out the rec level knob. 2. Remove the 1 nut.</p>
Ref. No. 9	Removal of the operation P.C.B.
Procedure 1→3→6→9	 <p>1. Remove the 4 screws (1~4). 2. Release the 4 claws.</p>
Ref. No. 10	Removal of the damper gear
Procedure 1→3→5→10	 <p>• Remove the 1 screw (1).</p>

Ref. No.
11 Removal of the cassette holderProcedure
10→11Ref. No.
12 Removal of the eject lever and eject buttonProcedure
1→3→4→5→12

- Push the claw in the direction of the arrow A.
- Remove the eject lever in the direction of the arrow B.

- Pull out the eject button.

MEASUREMENT AND ADJUSTMENT METHODS**Measurement Condition**

- Rec. level control; Maximum
- Timer switch; Off
- MPX filter switch: off
- Bias-adjustment VR: Center

- Dolby NR switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)

Measuring Instrument

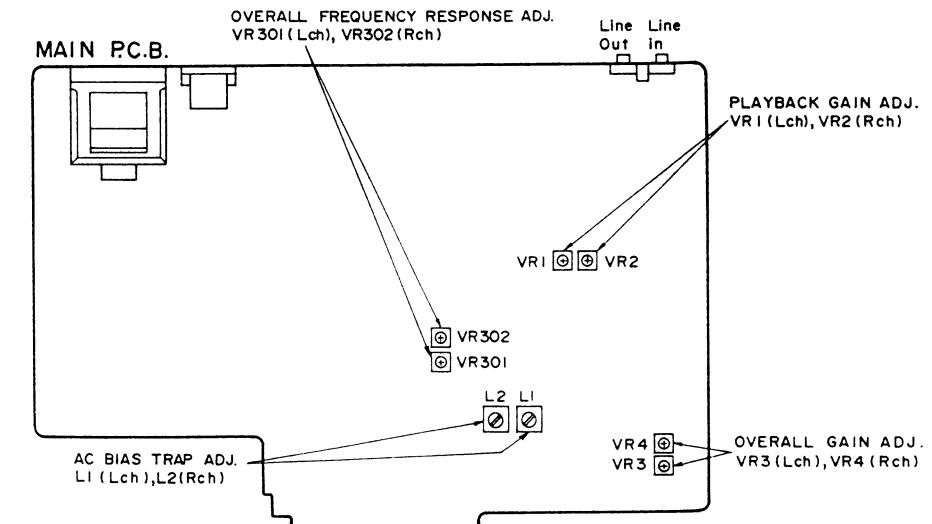
- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)

Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
Normal reference blank tape; QZZCRA
 CrO_2 reference blank tape; QZZCRX
Metal reference blank tape; QZZCRZ

• Adjustment Points

HEAD AZIMUTH ADJUSTMENT

1. Playback the azimuth adjustment portion (8 kHz, -20 dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

Note: If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

2. Perform the same adjustment in the play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

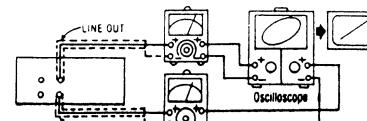


Fig. 1

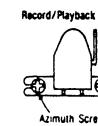


Fig. 2

PLAYBACK GAIN ADJUSTMENT

1. Playback the gain adjusted portion (315 Hz, 0 dB) of the test tape (QZZCFM).
2. Adjust VR1 (L-CH) and VR2 (R-CH) so that the output is within the standard value.

Standard value: $0.4V \pm 0.5dB$

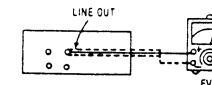


Fig. 3

PLAYBACK FREQUENCY RESPONSE

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
2. Assure that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

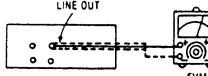


Fig. 4

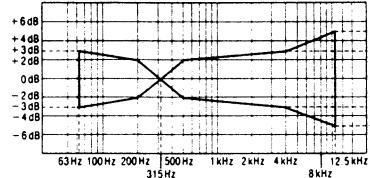
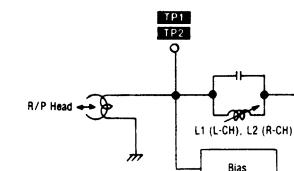


Fig. 5

AC BIAS TRAP ADJUSTMENT

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record mode.
2. Adjust L1 (L-CH) [[L2 (R-CH)]] so that the output voltage between TP1 (TP2) and GND is less than the minimum value.

**OVERALL FREQUENCY RESPONSE**

1. Insert the normal blank test tape (QZZCRA) and set the unit to the record pause mode.
2. Apply a reference input signal (1kHz, -24dB) through an attenuator.
3. Attenuate the signal by 20dB and adjust the frequency from 50Hz~10kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in Fig. 8 in comparison to the reference frequency (1kHz).
6. If it is not within the standard range, adjust VR301 (L-CH) and VR302 (R-CH) so that the frequency level is within the standard range.
 - Level up in high frequency rangeIncrease the bias current.
 - Level down in high frequency range ...Decrease the bias current.
7. Repeat steps 2~6 above using the CrO₂ tape (QZZCRX) and the metal tape (QZZCRZ) increasing the frequency range to 12.5kHz (50Hz~12.5kHz).
8. Assure that the level is within the range shown in Fig. 9.

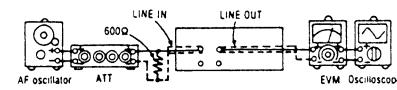


Fig. 10

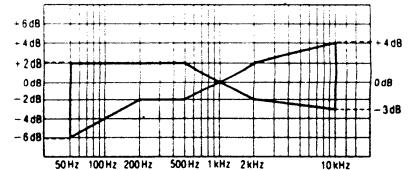
Normal Overall frequency response chart (NR OUT)

Fig. 8

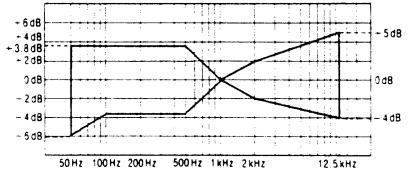
CrO₂, Metal Overall frequency response chart (NR OUT)

Fig. 9

OVERALL GAIN ADJUSTMENT

1. Insert the normal blank test tape (QZZCRA) and set the unit to the record pause mode.
2. Apply a reference input signal (1kHz, -24dB). Attenuate the output so that its level becomes 0.4V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
5. If it is not within the standard value, adjust VR3 (L-CH) and VR4 (R-CH).
6. Repeat the step 2~5 above until the output is within the standard value.

Standard value: $0.4V \pm 0.5dB$

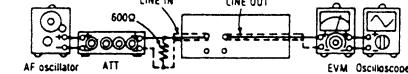


Fig. 11

■ TERMINAL FUNCTION OF IC'S

- IC901 (MB88511-224N): MICROCOMPUTER (This microcomputer is used for mechanical operation.)

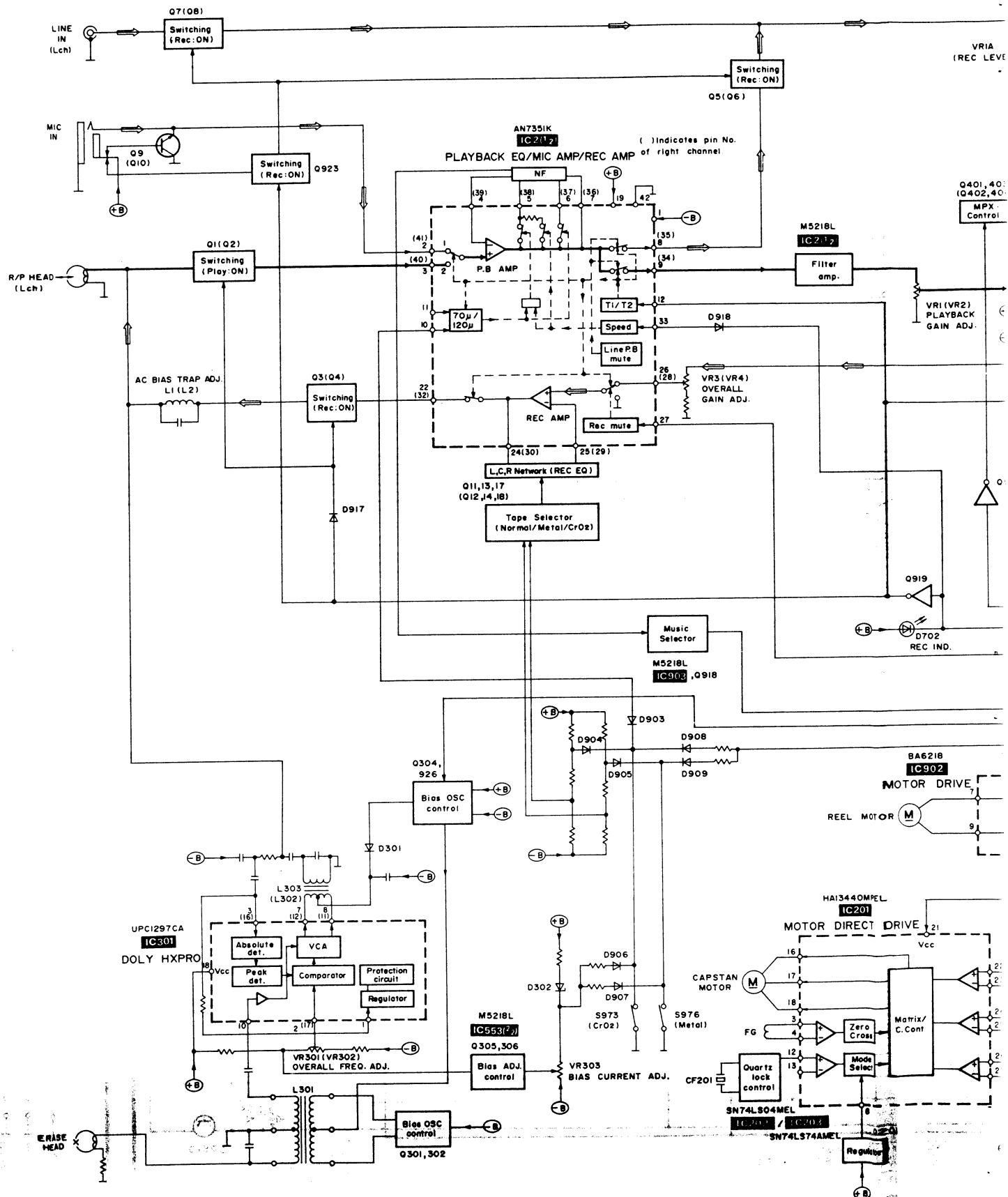
Pin No.	Mark	I/O Division	Function
1	DMT	O	Line out mute signal ("H"...ON, "L"...OFF)
2	RMT	O	REC AMP mute signal ("H"...ON, "L"...OFF)
3	BOS	O	BIAS OSC ON/OFF control signal ("H"...OFF, "L"...ON)
4	REC	O	REC LED ON/OFF control signal ("H"...OFF, "L"...ON)
5	PLAY	O	PLAY LED ON/OFF control signal ("H"...OFF, "L"...ON)
6	EJECT F	O	Power eject motor open control signal ("H"...OPEN, "L"...CLOSE/STOP)
7	EJECT R	O	Power eject motor close control signal ("H"...CLOSE, "L"...OPEN/STOP)
8	CAPM	O	Capstan motor ON/OFF control signal ("H"...OFF (POWER OFF or ABNORMAL CONDITION), "L"...ON)
9	SOL1	O	Trigger solenoid ON/OFF control signal ("H"...OFF, "L"...ON)
10	SOL2	O	Brake solenoid ON/OFF control signal ("H"...OFF, "L"...ON)
11	SOL2C	O	Brake solenoid hold ON/OFF control signal ("H"...OFF, "L"...ON (FF/REW/MS))
12	RP (REELPULSE)	I	Reel pulse signal
13	RMR	O	Reel motor reverse control signal ("H"...REW, "L"...STOP/PLAY/FF)
14	RMF	O	Reel motor foward control signal ("H"...FF/PLAY, "L"...STOP/REW)
15	OSC	I	Single capstan/Dual capstan select signal ("H"...DUAL CAPSTAN, "L"...SINGLE CAPSTAN)
		O	Calibration OSC circuit ON/OFF control signal ("H"...OFF, "L"...ON)
16	Ex	I	Clock OSC terminal (6 MHz)
17	X	O	
18	RES	I	Reset signal ("L"...RESET)
19	OSCF	O	Calibration OSC circuit (400Hz/10kHz) select signal ("H"...HIGH FREQ. (10kHz), "L"...LOW FREQ. (400Hz))
20	POF	I	AC POWER detect signal
21	Vss	—	GND

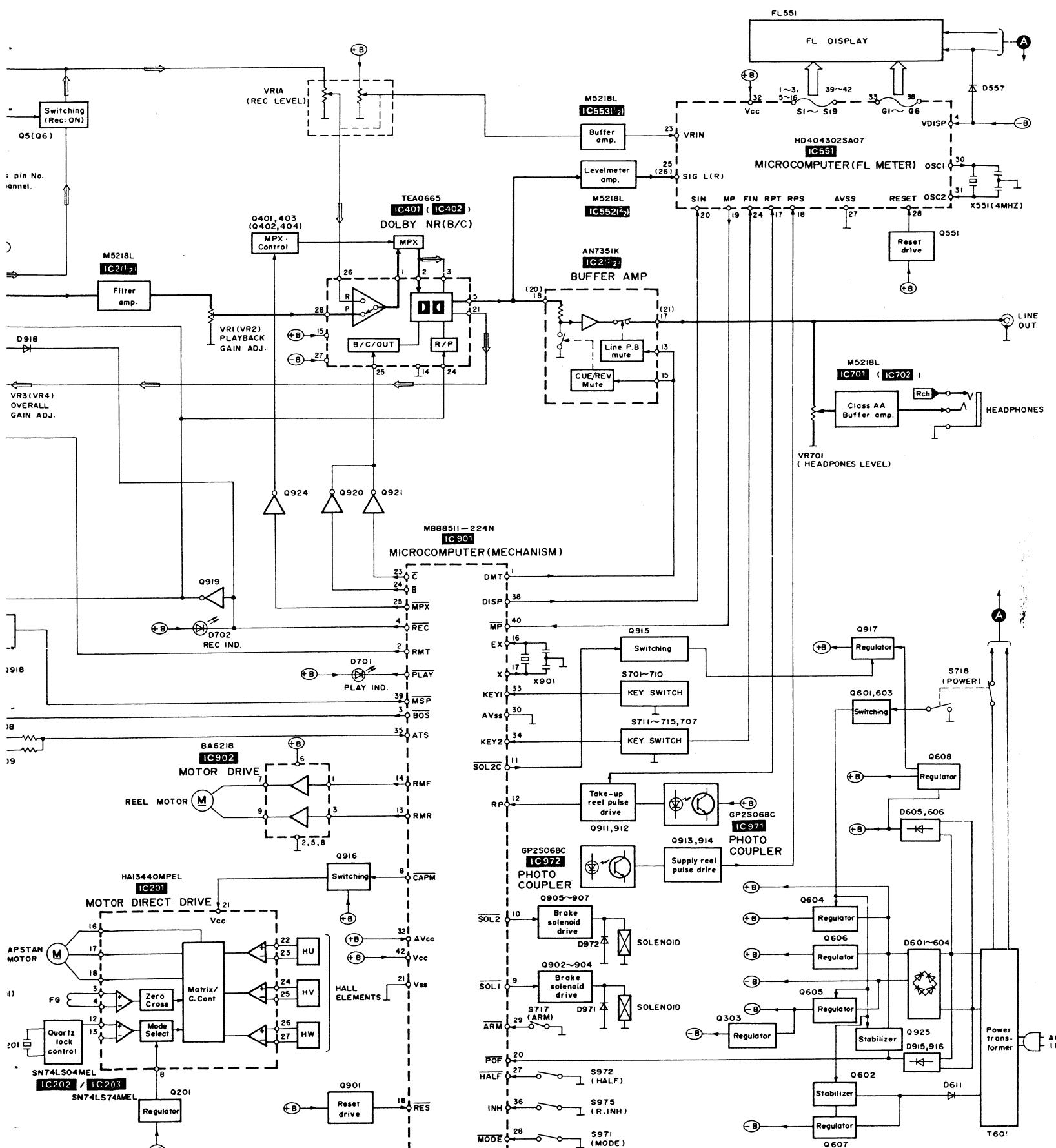
Pin No.	Mark	I/O Division	Function
22	DIRECT	I	CD direct operation det. signal
		O	CD direct/LINE input select control signal ("H"...CD DIRECT, "L"...LINE INPUT)
23	̄C	O	Dolby NR mode select signal
24	̄B		NR OFF Dolby B Dolby C dbx
25	MPX	O	MPX coll ON/OFF control signal ("H"...MPX OFF, "L"...MPX ON)
26	T/S	I	Two head/Three head select signal ("H"...THREE HEAD, "L"...TWO HEAD)
		O	Tape/Source monitor select control ("H"...TAPE MONITOR, "L"...SOURCE MONITOR)
27	HALF	I	Cassette half det. SW terminal ("L"...ON)
28	MODE	I	Mechanism mode SW terminal
29	ARM	I	Auto Rec Mute key signal ("L"...PUSH)
30	AVss	—	Connected to GND
31	AVR	—	Connected to GND
32	AVcc	—	Power supply terminal
33	KEY 1	I	Key SW Input (STOP/FF REW/PLAY/REC/PAUSE/dbx/C/B/MPX/TIMER REC/TIMER PLAY)
34	KEY 2	I	Key SW Input (MEMORY REPEAT/MEMORY STOP/EJECT/MONITOR/CD DIRECT/OSC/TEST/REMOTE A/B)
35	ATS	I	Auto Tape Select SW Input (ATSC/ATSM/EJECT OPEN LEAF SW)
36	INH	I	REC INH SW Input (REC INH/EJECT MOTOR LEAF SW)
37	B555	I	Connected to GND
38	DISP	O	Serial data signal of FL display (ACTIVE: "H")
39	MSP	I	Music select det. signal ("H"...NO SIGNAL, "L"...ON SIGNAL)
40	MEMORY PULSE	I	Memory Pulse signal
41	REMOCON	I	Remote control serial data ("L" for 50ms. with counter "0000")
42	Vcc	—	Power supply terminal

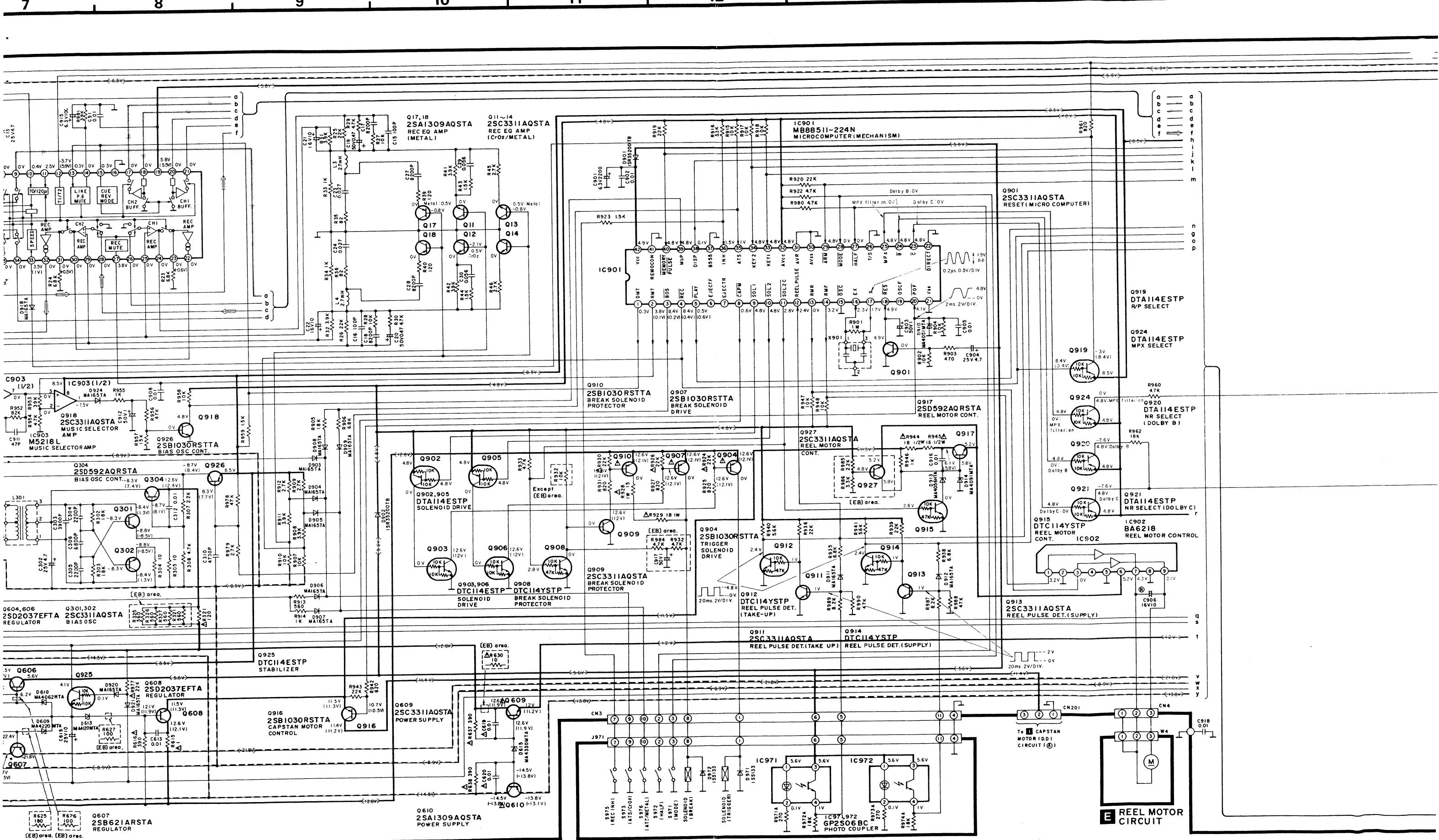
- IC551 (HD404302SA07): MICROCOMPUTER (This microcomputer is used for FL meter operation.)

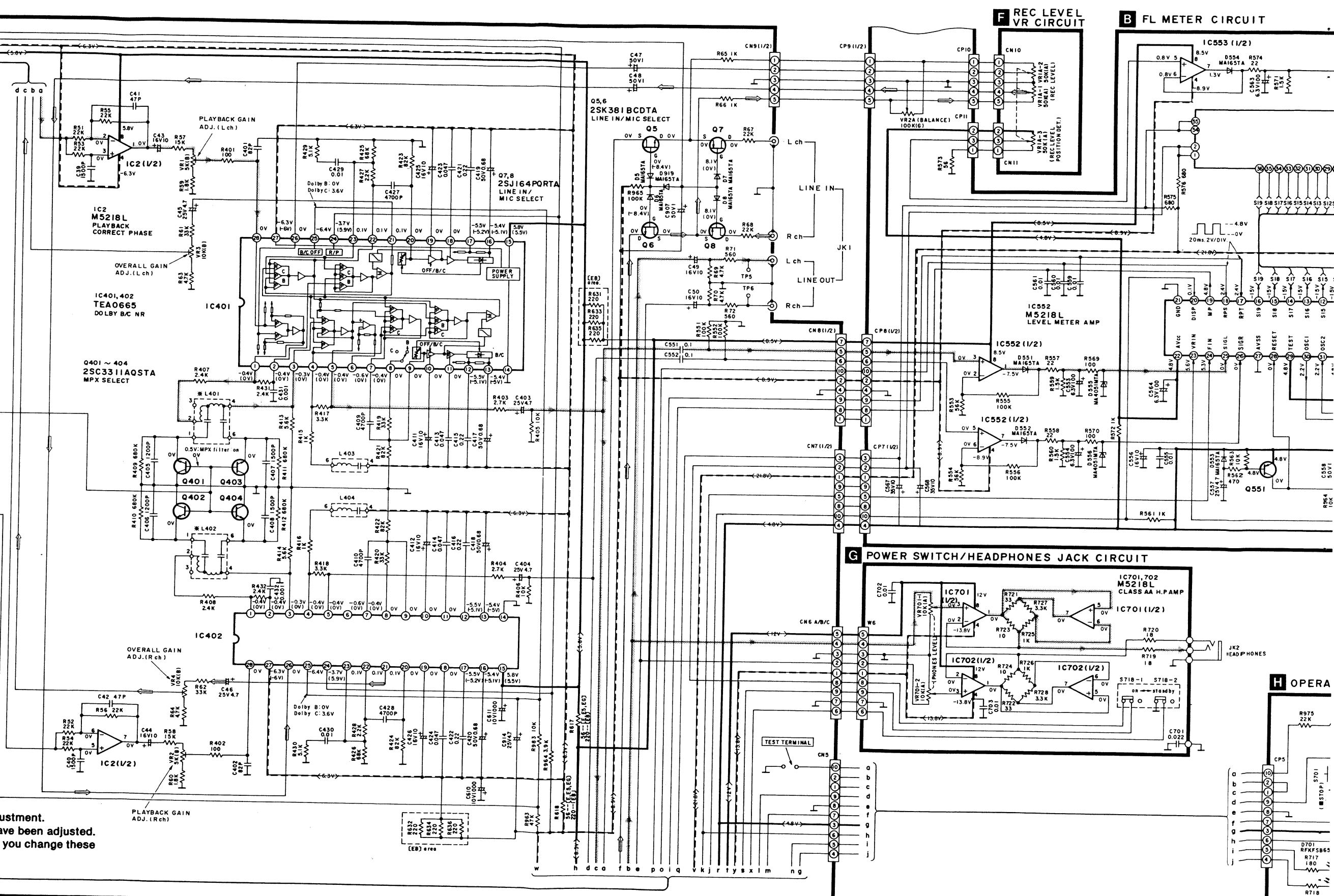
Pin No.	Mark	I/O Division	Function
1	S5	O	Segment signal for FL display
2	S6	O	
3	S7	O	Pull down power supply terminal (-Vcc)
4	Vdisp	—	
5	S8	O	Segment signal for FL display
6	S9	O	
7	S10	O	Segment signal for FL display
8	S11	O	
9	S12	O	Segment signal for FL display
10	S13	O	
11	S14	O	Segment signal for FL display
12	S15	O	
13	S16	O	Grid signal for FL display
14	S17	O	
15	S18	O	Grid signal for FL display
16	S19	O	
17	RPT	I	Reel pulse signal of tape up reel
18	RPS	I	Reel pulse signal of supply reel
19	MP	O	Memory pulse signal ("L" for 50ms. with counter "0000")
20	DISP	I	Serial data signal (ACTIVE: "H")
21	GND	—	GND terminal
22	AVcc	—	Power supply terminal
23	VR IN	I	Rec level control (VR MAX...+5 V)
24	F IN	I	Function key terminal (COUNTER RESET/COUNTER MODE/APRS)
25	SIG L	I	LCH level signal
26	SIG R	I	RCH level signal
27	AVss	—	Connected to GND
28	RESET	I	Reset terminal (with Reset: "H")
29	TEST	I	Test terminal
30	OSC 1	O	Clock OSC terminal (4 MHz)
31	OSC 2	I	
32	Vcc	I	Power supply terminal
33	G1	O	Grid signal for FL display
34	G2	O	
35	G3	O	Segment signal for FL display
36	G4	O	
37	G5	O	Segment signal for FL display
38	G6	O	
39	S1	O	Segment signal for FL display
40	S2	O	
41	S3	O	Segment signal for FL display
42	S4	O	

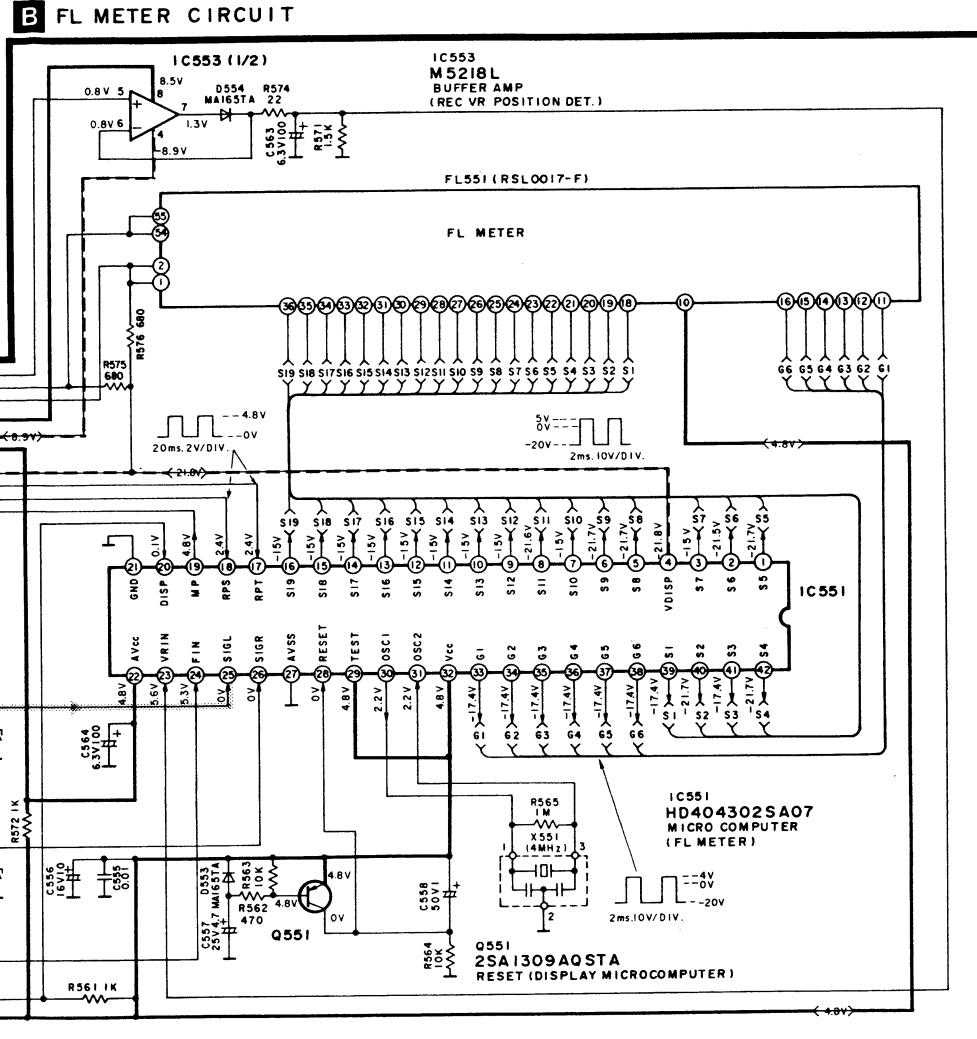
BLOCK DIAGRAM



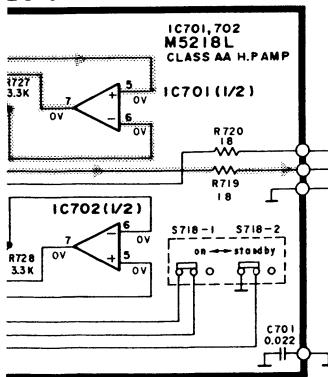




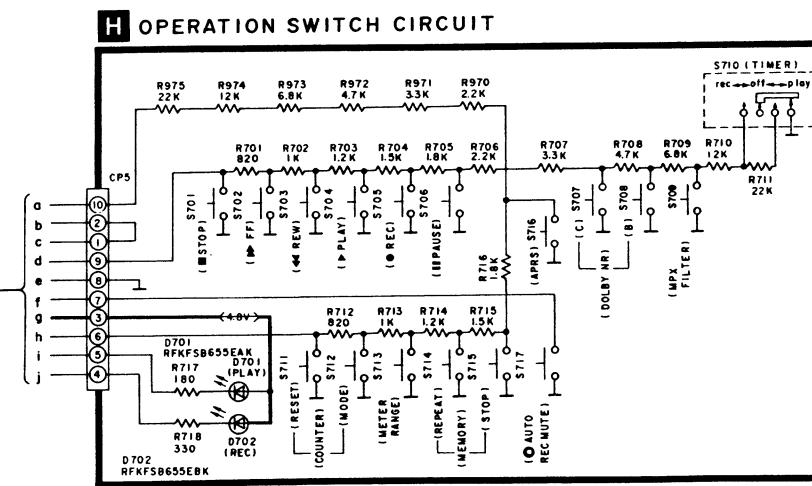


EVEL
RCUIT

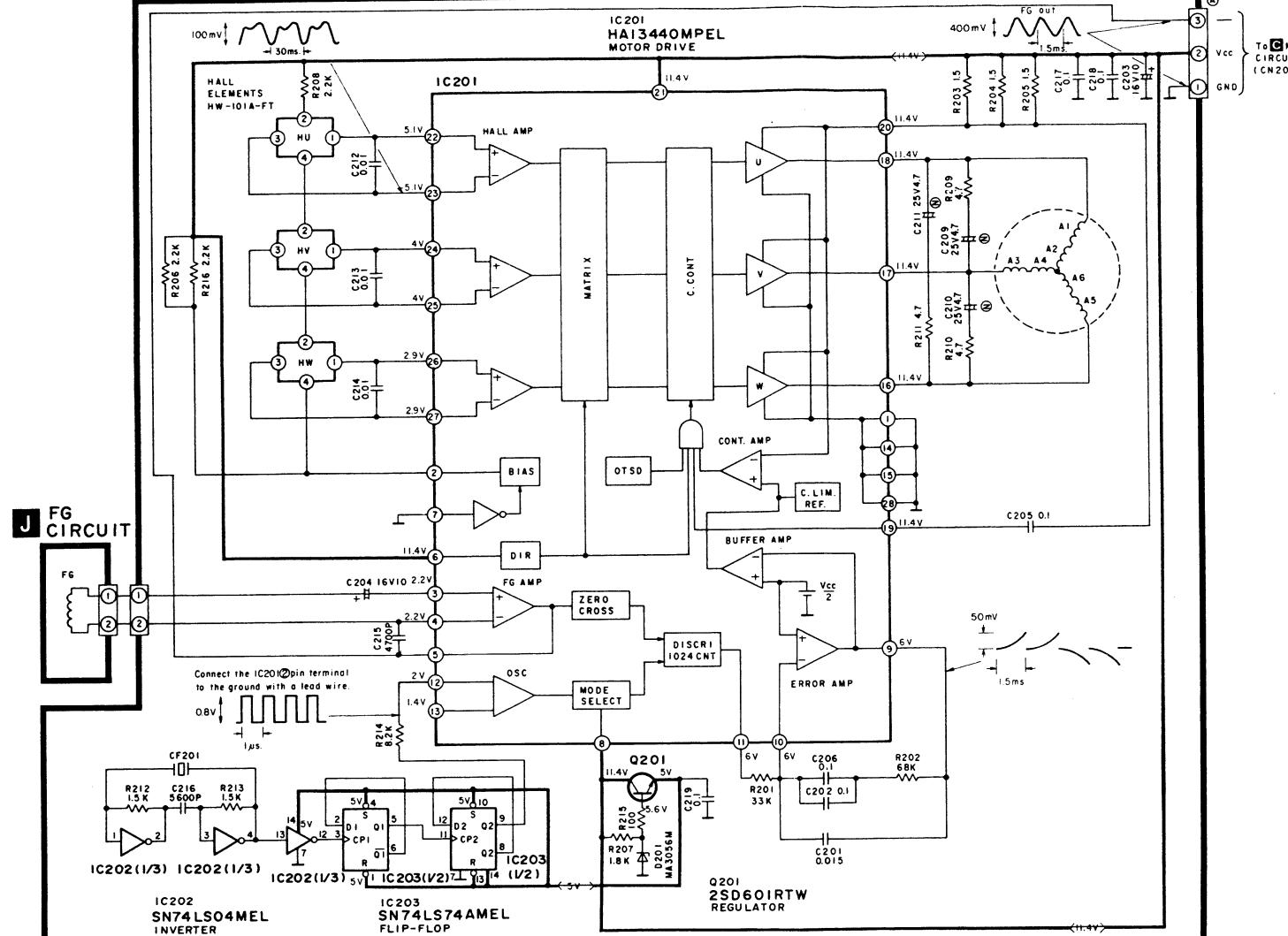
ES JACK CIRCUIT



H OPERATION SWITCH CIRCUIT



I CAPSTAN MOTOR(DD) CIRCUIT

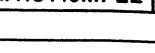
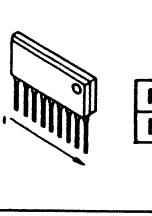
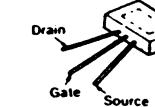
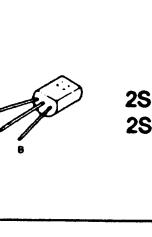
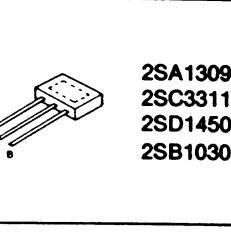
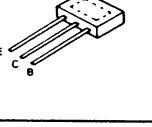
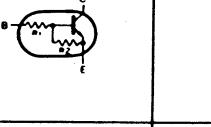
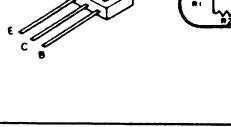
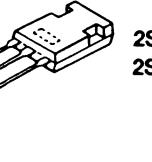
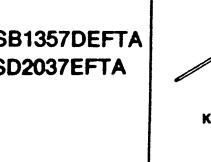
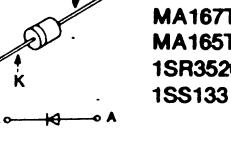
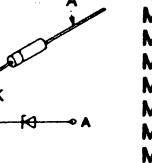
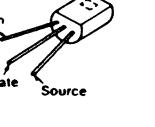
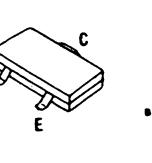
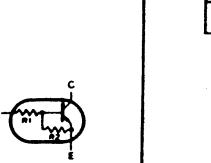
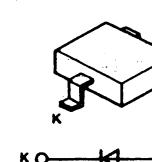
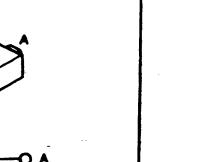


■ TROUBLESHOOTING OF DIRECT DRIVE MOTOR

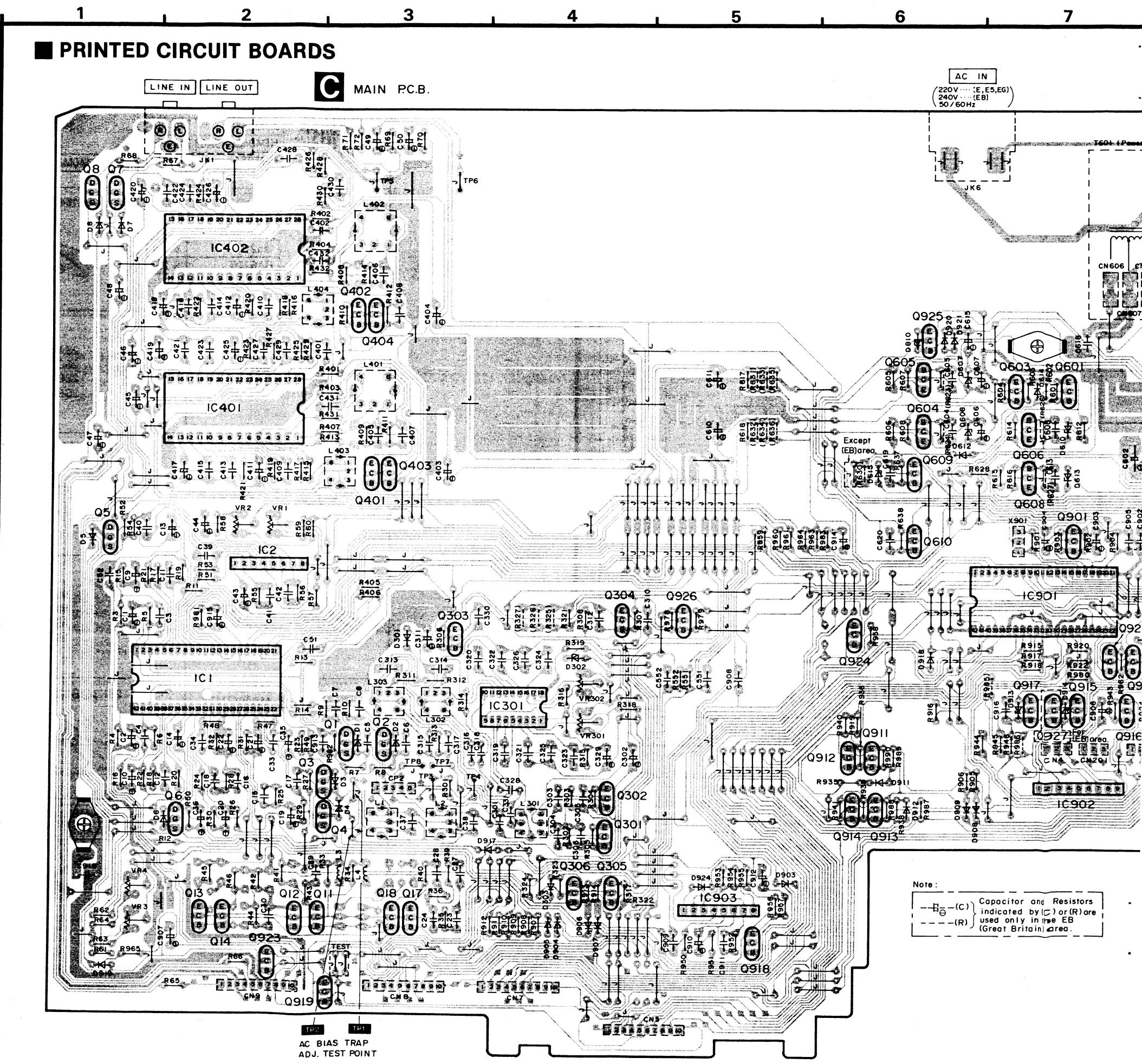
Problem	Possible Cause	Check Points
1. The motor does not rotate.	1. No power supply (+12V) 2. The Hall element has failed (Current does not flow). 3. The ceramic (or crystal) does not oscillate.	• Check the voltage applied to the connector. • Check the DC potential on IC pins ②~⑦. * Check the waveform of IC pin ⑨.
2. The motor does not rotate properly. (When pressed, it stops at certain angles. Sometimes it does not rotate even if power is ON.)	1. The coil is broken or not properly soldered. 2. Output of the Hall element is not proper.	* Check the conductance of the coil. If normal, the resistances between IC pins ⑩~⑪, ⑫~⑬, ⑭~⑮ will reach 20 ohms. • Check the waveform of IC pins ⑫~⑯.
3. The motor is out of control.	1. The FG coil is broken.	• Check the waveform of IC pin ⑤. • Check if the FG coil is broken.
4. Abnormal wow	1. Same as those described for problem 2.	

Note: Check the points marked with an asterisk (*) by removing the DD motor control P.C.B. and then connecting IC pin ② to GND with a lead wire. (After the DD motor control P.C.B. is removed, current will start flowing through the coil, heating the IC.)

■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

	<table border="1"> <tbody> <tr><td>UPC1297CA</td><td>18 Pin</td></tr> <tr><td>TEA0665</td><td>28 Pin</td></tr> <tr><td>AN7351K</td><td>42 Pin</td></tr> <tr><td>HD404302SA07</td><td>42 Pin</td></tr> <tr><td>MB88511-224N</td><td>42 Pin</td></tr> </tbody> </table>	UPC1297CA	18 Pin	TEA0665	28 Pin	AN7351K	42 Pin	HD404302SA07	42 Pin	MB88511-224N	42 Pin	
UPC1297CA	18 Pin											
TEA0665	28 Pin											
AN7351K	42 Pin											
HD404302SA07	42 Pin											
MB88511-224N	42 Pin											
	<table border="1"> <tbody> <tr><td>M5218L</td><td>8 Pin</td></tr> <tr><td>BA6218</td><td>9 Pin</td></tr> </tbody> </table>	M5218L	8 Pin	BA6218	9 Pin	<p>2SJ164PQRTA</p> 						
M5218L	8 Pin											
BA6218	9 Pin											
	<p>2SB621ARSTA 2SD592A</p>	 <p>2SA1309AQSTA 2SC3311AQSTA 2SD1450RSTTA 2SB1030RSTTA</p>										
<p>DTC114ESTP DTC114YSTP</p> 		<p>DTA114ESTP</p> 										
	<p>2SB1357DEFTA 2SD2037EFTA</p> 	 <p>MA167TA MA165TA 1SR35200TB 1SS133</p>										
	<p>MA4200M MA4047MTA MA4091MTA MA4062HTA MA4120M MA4330MTA MA4056H MA4051MTA MA4056MTA</p>	<p>2SK381BCDTA</p> 										
<p>2SD601RTW</p> 		<table border="1"> <tbody> <tr><td>SN74LS04MEL</td><td>14 Pin</td></tr> <tr><td>SN74LS74AMEL</td><td>14 Pin</td></tr> </tbody> </table> 	SN74LS04MEL	14 Pin	SN74LS74AMEL	14 Pin						
SN74LS04MEL	14 Pin											
SN74LS74AMEL	14 Pin											
<p>MA3056MTW</p> 												

■ PRINTED CIRCUIT BOARDS



7

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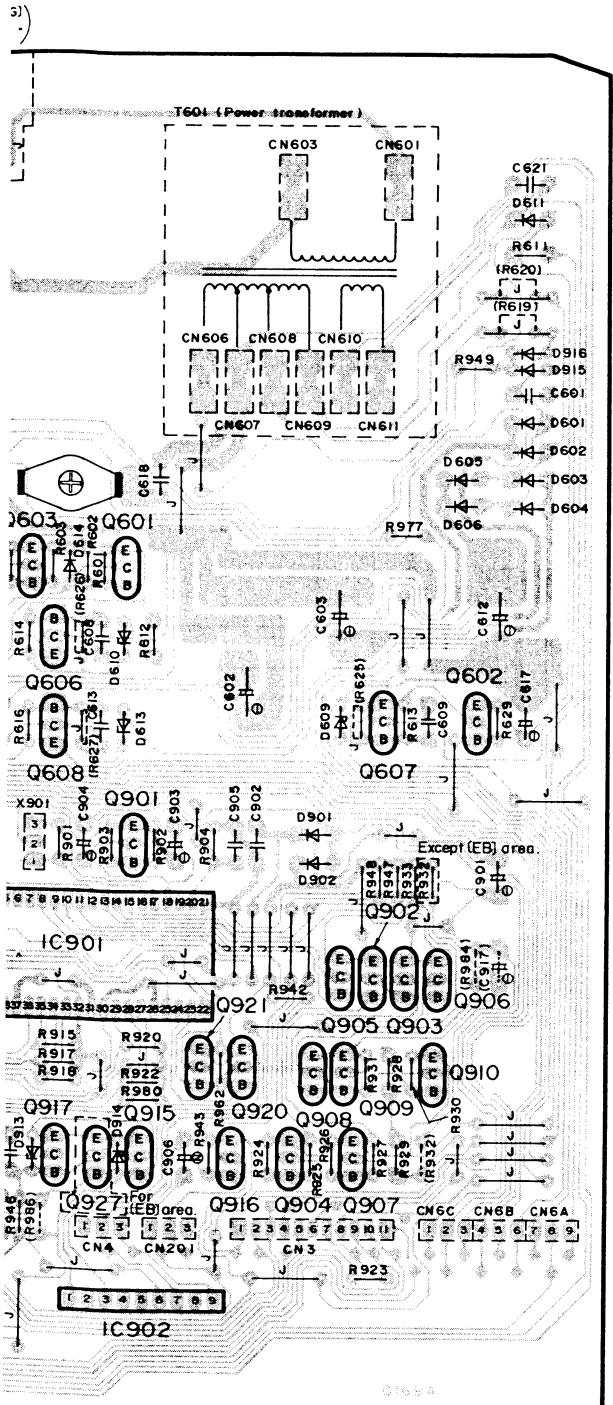
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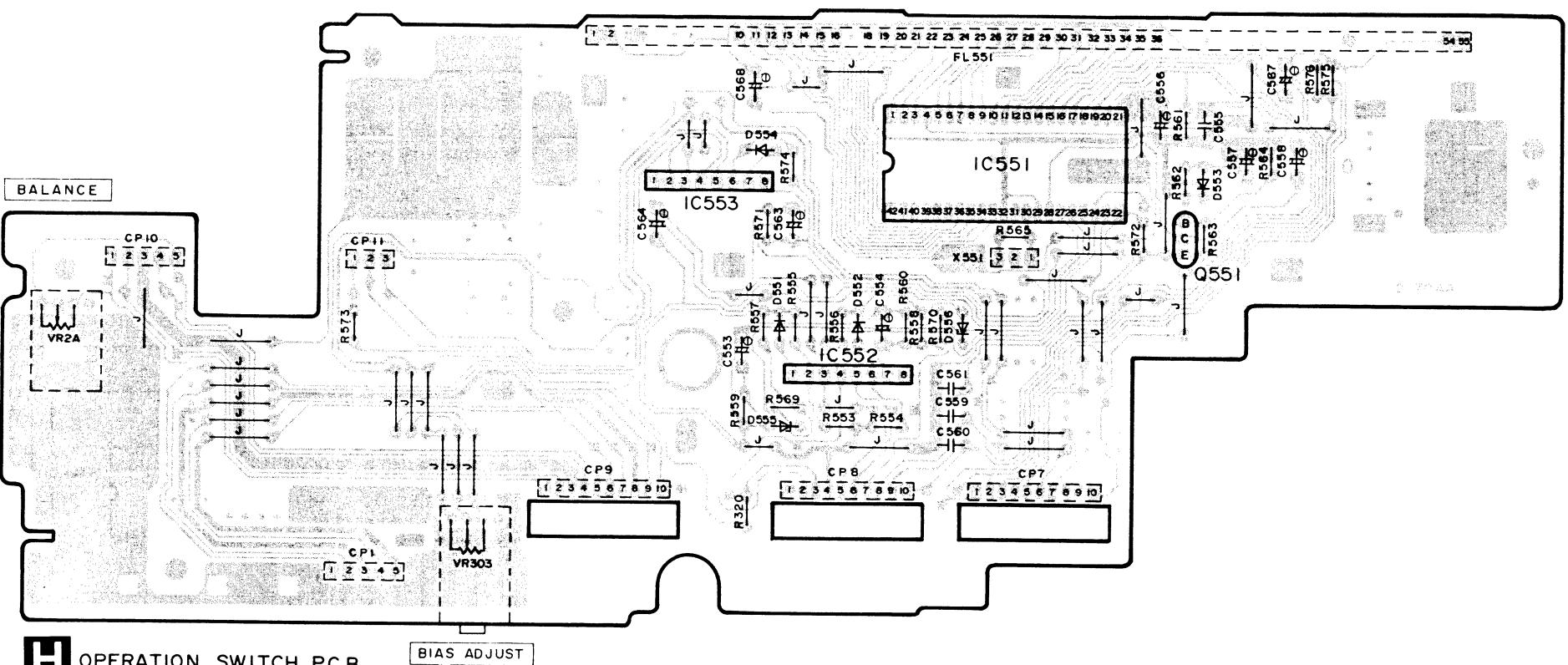
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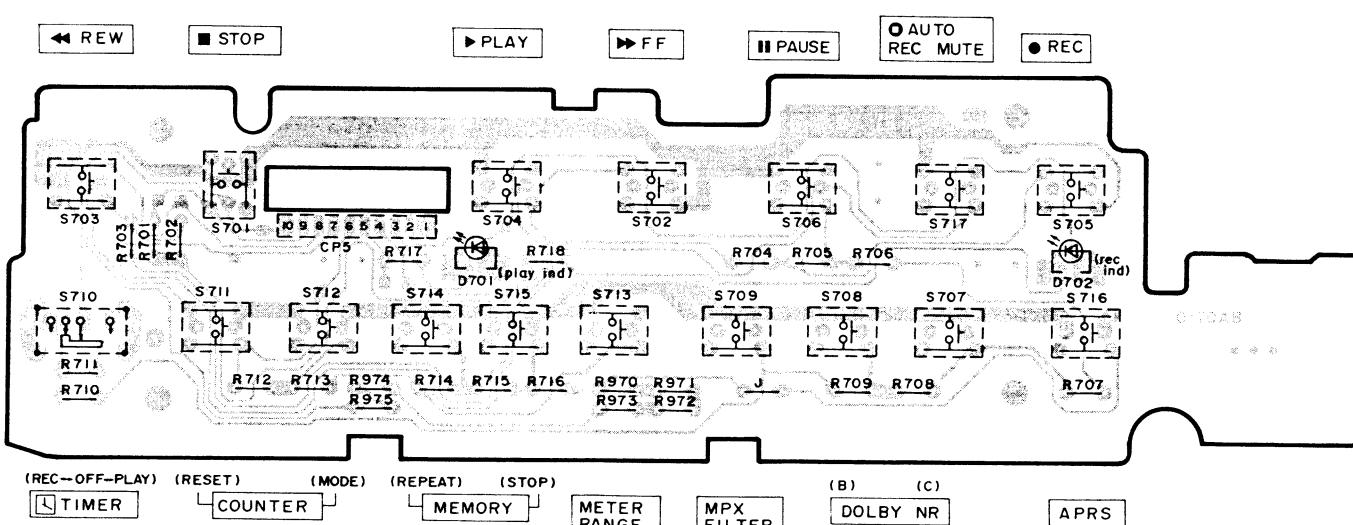
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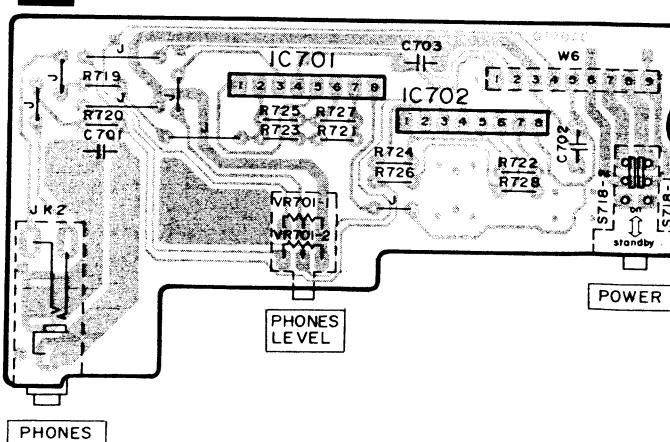
B FL METER P.C.B.



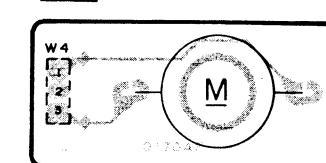
H OPERATION SWITCH P.C.B. BIAS ADJUST



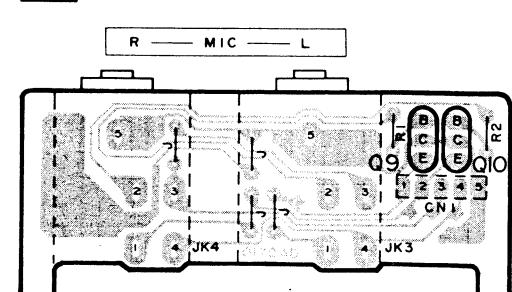
G POWER SWITCH/HEADPHONES JACK P.C.B.



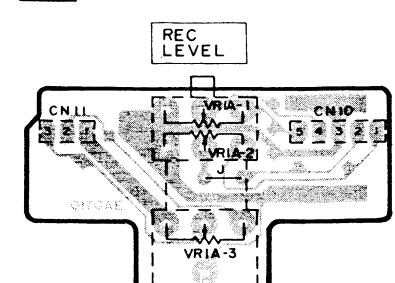
E REEL MOTOR P.C.B.



A MIC JACK P.C.B.



F REC LEVEL VR P.C.B.



REPLACEMENT PARTS LIST

Notes : • Important safety notice:
 Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
 • The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
 Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		Q905	DTA114ESTP	TRANSISTOR	
		IC1 AN7351K IC, PLAYBACK EQ./MIC AMP		Q906	DTC114ESTP	TRANSISTOR	
		IC2 M5218L IC, PLAYBACK CORRECT PHASE		Q907	2SB1030RSTTA	TRANSISTOR	Δ
IC201	HA13440MEL	IC, MOTOR DRIVE		Q908	DTC114YSTP	TRANSISTOR	
IC202	SN74LS04MEL	IC, INVERTER		Q909	2SC3311AQSTA	TRANSISTOR	
IC203	SN74LS74AMEL	IC, FLIP-FLOP		Q910	2SB1030RSTTA	TRANSISTOR	Δ
IC301	UPC1297CA	IC, DOLBY IX PRO		Q911	2SC3311AQSTA	TRANSISTOR	
IC401, 402	TEA0665	IC, DOLBY B/C NR		Q912	DTC114ESTP	TRANSISTOR	
IC551	HD404302SAD7	IC, MICROCOMPUTER;FL METER		Q913	2SC3311AQSTA	TRANSISTOR	
IC552	M5218L	IC, LEVEL METER AMP		Q914	DTC114ESTP	TRANSISTOR	
IC553	M5218L	IC, BUFFER AMP		Q915	DTC114YSTP	TRANSISTOR	
IC701, 702	M5218L	IC, Class AA : H.P. AMP		Q916	2SB1030RSTTA	TRANSISTOR	
IC901	MB8511-224N	IC, MICROCOMPUTER;MECHANICAL		Q917	2SD592A	TRANSISTOR	
IC902	BA6218	IC, REEL MOTOR CONTROL		Q918	2SC3311AQSTA	TRANSISTOR	
IC903	M5218L	IC, MUSIC SELECTOR AMP		Q919-921	DTA114ESTP	TRANSISTOR	
IC971, 972	GZ2S06BC	IC, PHOTO COUPLER		Q923, 924	DTA114ESTP	TRANSISTOR	
		TRANSISTOR(S)		Q925	DTC114ESTP	TRANSISTOR	
				Q926	2SB1030RSTTA	TRANSISTOR	
				Q927	2SC3311AQSTA	TRANSISTOR	(EB)
						DIODE (S)	
Q1, 2	2SJ164PQTA	TRANSISTOR					
Q3-6	2SK381BCDTA	TRANSISTOR		D1, 2	MA165TA	DIODE	
Q7, 8	2SJ164PQTA	TRANSISTOR		D3-8	MA165TA	DIODE	
Q9, 10	2SD1450RSTA	TRANSISTOR		D201	MA305GMW	DIODE	
Q11-14	2SC3311AQSTA	TRANSISTOR		D301	MA165TA	DIODE	
Q17, 18	2SA1309AQSTA	TRANSISTOR		D302	MA405GMTA	DIODE	
Q201	2SD601RTW	TRANSISTOR		D303	MA165TA	DIODE	
Q301, 302	2SC3311AQSTA	TRANSISTOR		D551-554	MA165TA	DIODE	
Q303	2SB621ARSTA	TRANSISTOR	Δ	D555, 556	MA4051MTA	DIODE	
Q304	2SD592A	TRANSISTOR		D601-606	1SR35200TB	DIODE	Δ
Q305, 306	2SA1309AQSTA	TRANSISTOR		D607, 608	MA4091MTA	DIODE	
Q401-404	2SC3311AQSTA	TRANSISTOR		D609	MA4220M	DIODE	
Q551	2SA1309AQSTA	TRANSISTOR		D610	MA4062HTA	DIODE	
Q601	2SA1309AQSTA	TRANSISTOR	Δ	D611	1SR35200TB	DIODE	Δ
Q602, 603	2SC3311AQSTA	TRANSISTOR	Δ	D612	MA165TA	DIODE	
Q604	2SD2037EFTA	TRANSISTOR		D613	MA4120M	DIODE	
Q605	2SB1357EFTA	TRANSISTOR		D614	MA165TA	DIODE	
Q606	2SD2037EFTA	TRANSISTOR		D615	MA4330MTA	DIODE	
Q607	2SB621ARSTA	TRANSISTOR		D701	RWMFS8655EAK	L. E. D ASS'Y	
Q608	2SD2037EFTA	TRANSISTOR		D702	RWMFS8655EBK	L. E. D ASS'Y	
Q609	2SC3311AQSTA	TRANSISTOR	Δ	D901, 902	1SR35200TB	DIODE	
Q610	2SA1309AQSTA	TRANSISTOR	Δ	D903	MA165TA	DIODE	Δ
Q901	2SC3311AQSTA	TRANSISTOR		D904-909	MA165TA	DIODE	
Q902	DTA114ESTP	TRANSISTOR		D910	MA4051MTA	DIODE	
Q903	DTA114ESTP	TRANSISTOR		D911, 912	MA165TA	DIODE	
Q904	2SB1030RSTTA	TRANSISTOR	Δ	D913	MA4056H	DIODE	

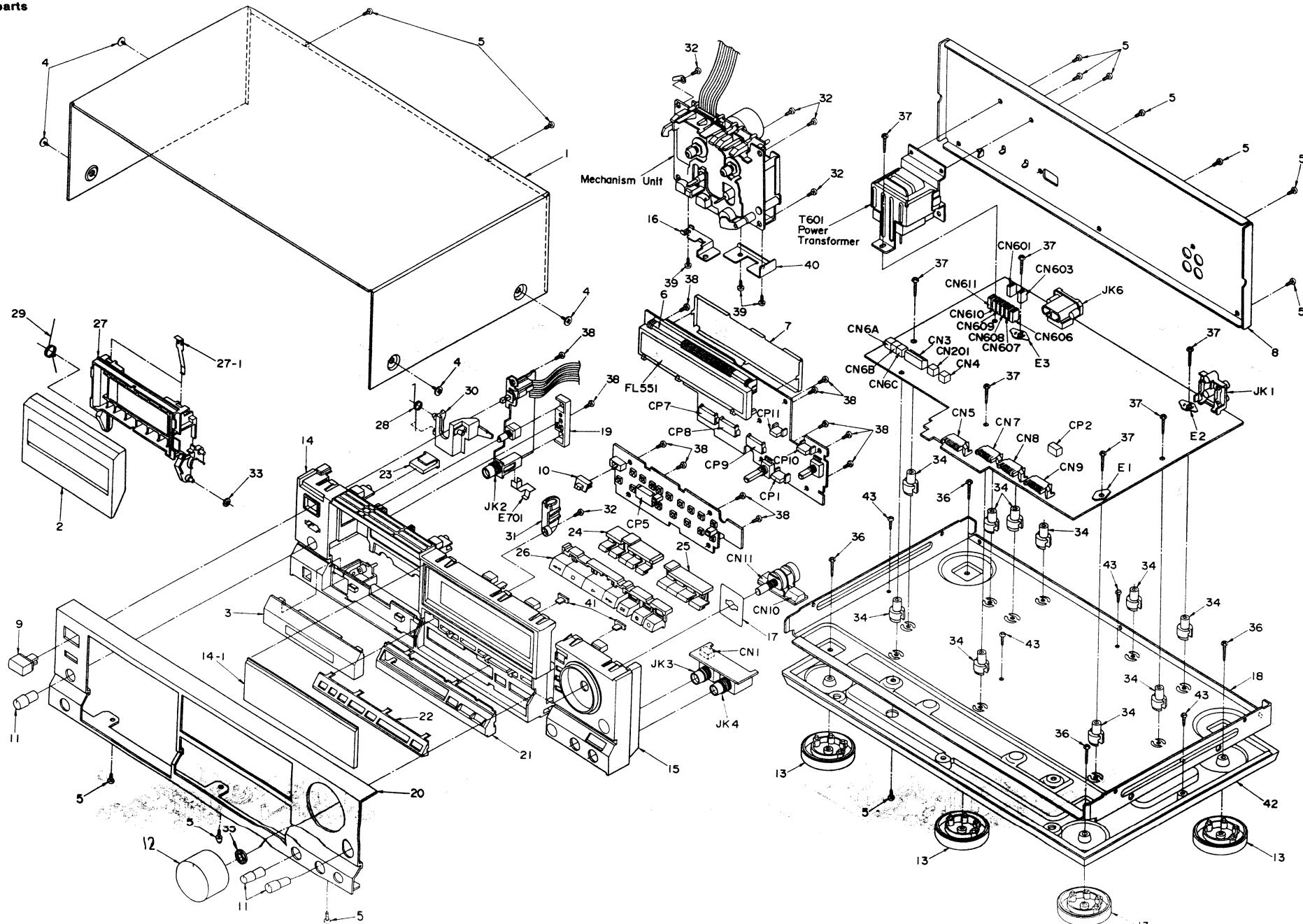
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
D914	MA4091MTA	DIODE		S712	EVQQTG05R	SW, COUNTER MODE	
D915, 916	MA165TA	DIODE	Δ	S713	EVQQTG05R	SW, METER RANGE	
D917-921	MA165TA	DIODE		S714	EVQQTG05R	SW, MEMORY REPEAT	
D924	MA165TA	DIODE		S715	EVQQTG05R	SW, MEMORY STOP	
D971, 972	ISS133	DIODE		S716	EVQQTG05R	SW, APRS	
		VARIABLE RESISTOR(S)		S717	EVQQTG05R	SW, AUTO REC MUTE	
				S718	SSH1230	SW, POWER	
				S971	RSH1A89Z	SW, MODE	
				S972	RSH1A90Z	SW, HALF	
				S973	RSH1A90Z	SW, ATS	
				S975	RSH1A90Z	SW, REC INHIBIT	
				S976	RSH1A90Z	SW, ATS	
						CONNECTOR(S) AND SOCKET(S)	
				CN1	SJT30545JQ	CONNECTOR(5P)	
				CN3	SJSD1105	CONNECTOR(11P)	
				CN4	RJS1A1703	CONNECTOR/CONNECTOR(3P)	
				CN5	RJU003K010M	SOCKET(10P)	
				CN6A-BC	RJS1A1703	CONNECTOR(3P)	
				CN7-9	RJU003K010M	SOCKET(10P)	
				CN10	SJT30545JQ	CONNECTOR(5P)	
				CN11	SJT30345JQ	CONNECTOR(3P)	
				CN201	RJS1A1703	CONNECTOR(3P)	
				CN201A	RJS2T4ZA	CONNECTOR(2P)	
				CN601	RJS1A1101	SOCKET(1P)	Δ
				CN603	RJS1A1101	SOCKET(1P)	Δ
				CN606-611	RJS1A1101	SOCKET(1P)	
				CP1	SJS50578JQ	SOCKET(5P)	
				CP2	SJT0513	CONNECTOR(5P)	
				CP5	RJT003K010	CONNECTOR(10P)	
				CP7-9	RJT003K010	CONNECTOR(10P)	
				CP10	SJS50578JQ	SOCKET(5P)	
				CP11	SJS50378JQ	SOCKET(3P)	
						GND PART(S)	
				E1-3	SNE1004-1	GND PLATE	
				E701	SUSD165	GND SPRING	
						JACK(S)	
				JK1	SJF3069N	TERMINAL BOARD	
				JK2	SJJ146B	JACK, HEADPHONES	
				JK3, 4	RJJ65MS01	JACK, MIC	
				JK6	SJS8236	AC INLET	Δ
						CERAMIC FILTER(S)	
				CF201	RSXA3M74S01	CERAMIC FILTER	
						JAMPER(S)	
				J201-206	ERJ6GEYD00V	CHIP JAMPER	

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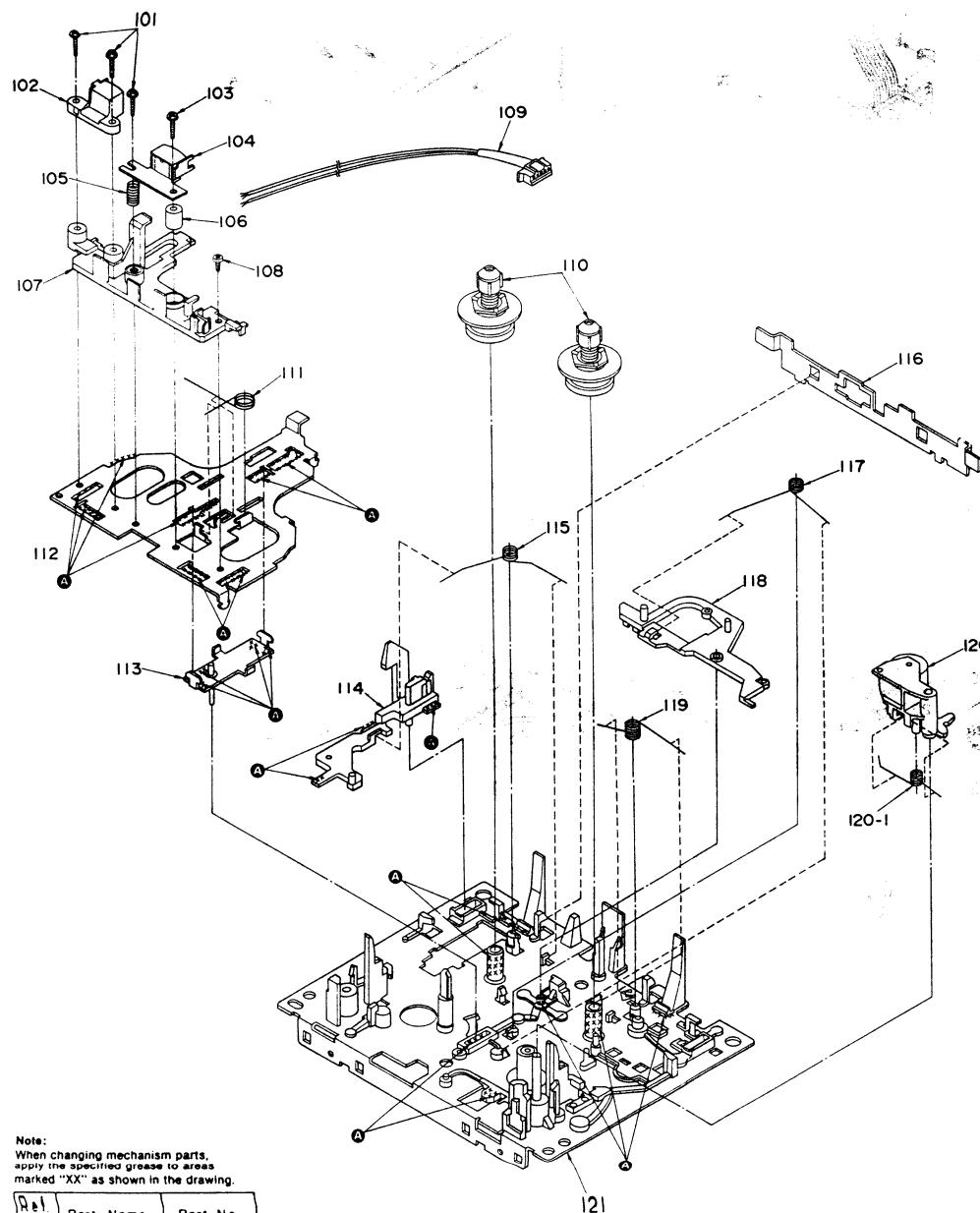
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		40	RSC0076	SHIELD PLATE	
1	RKMD036-K	CABINET		41	RGL0030	PANEL LIGHT	
2	RYF0027	CASSETTE LID		42	RKU0009	BOTTOM BOARD	
3	RYQ0027	ORNAMENT		43	XTB3+10G	SCREW	
4	SNE2129-1	SCREW				PACKING MATERIAL	
5	XTB3+8JFZ1	SCREW		P1	RPQ0255	CARTON BOX	
6	RMN0021	FL. HOLDER		P2	RPN0178	PAD, FRONT/BACK	
7	RSC0048	SHIELD PLATE		P3	SPS5185	PAD, ACCESSORIES	
8	RGR0024-A	REAR PANEL	(E)	P4	SPP756	PROTECTION COVER	
8	RGR0024-C	REAR PANEL	(E5)			ACCESSORIES	
8	RGR0024-E	REAR PANEL	(EB)				
8	RGR0024-L	REAR PANEL	(EG)	A1	RQF0239	INSTRUCTION MANUAL	(EG)
9	RGU0030	BUTTON, POWER		A1	RQF0240	INSTRUCTION MANUAL	(E, E5)
10	RGV0022	KNOB, TIMER		A1	RQF0241	INSTRUCTION MANUAL	(EB)
11	RGW0032	KNOB, BALANCE LEVEL		A2	SFDAC05E03	POWER CORD	(E, E5, EG) Δ
12	RGW0033	KNOB, REC LEVEL		A2	SJA193-1	POWER CORD	(EB) Δ
13	RKA0009-1	FOOT		A3	SJP2249-3	STEREO CONNECTION CABLE	
14	RFKNSB655EAK	FRONT GRILLE ASS'Y(I)					
14-1	RKW0038	TRANSPARENT PLATE					
15	RFKNSB655EBK	FRONT GRILLE ASS'Y(2)					
16	RMC0040	BRACKET					
17	RMC0056	SHIELD PLATE					
18	RMB0026-1	CHASSIS					
19	RMN0022	ORNAMENT					
20	RFKGSB655E-K	FRONT PANEL ASS'Y					
21	RGD0117	ORNAMENT, BUTTON(A)					
22	RGD0118	ORNAMENT, BUTTON(B)					
23	RGU0130	BUTTON, EJECT					
24	RGU0131	BUTTON, COUNTER					
25	RGU0132	BUTTON, NOISE REDUCTION					
26	RGU0133	BUTTON, OPERATION					
27	RKF0020A-3	CASSETTE HOLDER					
27-1	QBP2006A	SPRING, TAPE PRESSURE					
28	RME0032	SPRING					
29	RME0034	SPRING					
30	RML0086	EJECT LEVER					
31	RMR0153	DAMPER GEAR ASS'Y					
32	XTB3+10JFZ	SCREW					
33	SUD44-1	WASHER					
34	SHE187-2	HOLDER					
35	SNE4021-1	NUT					
36	XTB3+16G	SCREW					
37	XTB3+20J	SCREW					
38	XTB3+8JFZ	SCREW					
39	XTB26+4FFZ	SCREW					

■ EXPLODED VIEWS

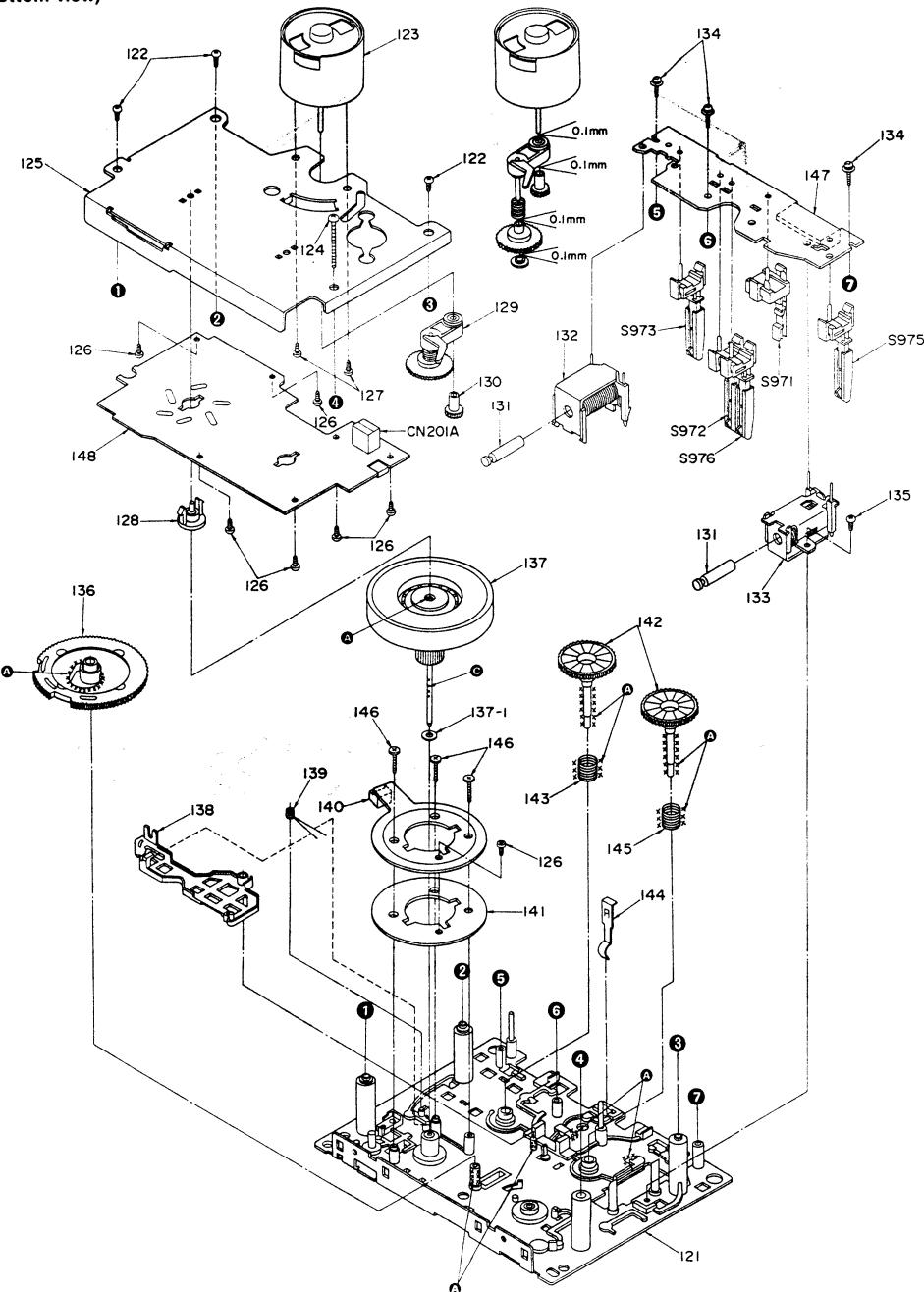
- Cabinet parts



• Mechanical parts
(Top view)



(Bottom view)



Note:
When changing mechanism parts,
apply the specified grease to areas
marked "XX" as shown in the drawing.

No.	Part Name	Part No.
Ⓐ	FLOIL AK-152	SZZOL 18
Ⓖ	FLOIL 947 P	RZZOL 02

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
MECHANISM PARTS LIST							
101	QHQ1361A	SCREW		148	REP0268A	STATER P.C.B. ASS'Y	
102	SJH96-1	E HEAD					
103	RHE52012A	SCREW					
104	RJHAC35GZAM	R/P HEAD					
105	QBC1278A	SPRING					
106	RHM2782A	SPACER					
107	RMD50132C	HEAD SPACER					
108	XTN2-5F	SCREW					
109	REX0075	LEAD WIRE BLOCK					
110	RXR0001	REEL TABLE					
111	RW11392A	SPRING					
112	RW0047B	HEAD BASE					
113	RXQ0078	MAIN ROD ASS'Y					
114	RMD0012-2	EJECT ROD(L.)					
115	RMD0018-1	SPRING					
116	RUD5022	LEVER					
117	RME0020	SPRING					
118	RKL0007	BRAKE LEVER					
119	RW1142ZA	SPRING					
120	RXF0004	PINCH ROLLER ARM					
120-1	RW11402B	SPRING					
121	RFKRSB555E-K	CHASSIS ASS'Y					
122	XTN26-7J	SCREW					
123	MNN-6F4RA88	REEL MOTOR					
124	XTN26-26F	SCREW					
125	RMA0048A	FLYWHEEL PLATE					
126	XTN2-3F	SCREW					
127	XSN26-3	SCREW					
128	RMD141	THRUST BEARING					
129	RKG0009	GEAR ASS'Y					
130	RDG0034	REEL MOTOR GEAR					
131	RUB428Z	MOVING IRON CORE					
132	RSJ0003	SOLENOID					
133	RXQ0011	BRAKE SOLENOID					
134	XTW2-8S	SCREW					
135	XTN26-4F	SCREW					
136	RDG0030	MAIN GEAR					
137	RXF0008	FLYWHEEL					
137-1	RW11392A	WASHER					
138	RML0037	LEVER					
139	RW1147ZA	SPRING					
140	RJS2772A	CONNECTOR(2P)					
141	RWD0037	NYLON					
142	RXG0003	REEL TABLE GEAR					
143	RUQ112ZA	SPRING					
144	RUS609Z	TAPE PRESSURE SPRING					
145	RUQ111ZA	SPRING					
146	RHE5204ZA	SCREW					
147	RJS11T72A	CONNECTOR(11P)					

RESISTORS & CAPACITORS

Notes : • Capacity values are in microfarads (μF) unless specified otherwise, P=Picofarads (pF) F=Farads (F)
 • Resistance values are in ohms, unless specified otherwise, 1K=1,000 (ΩHM) . 1M=1,000k (ΩHM)

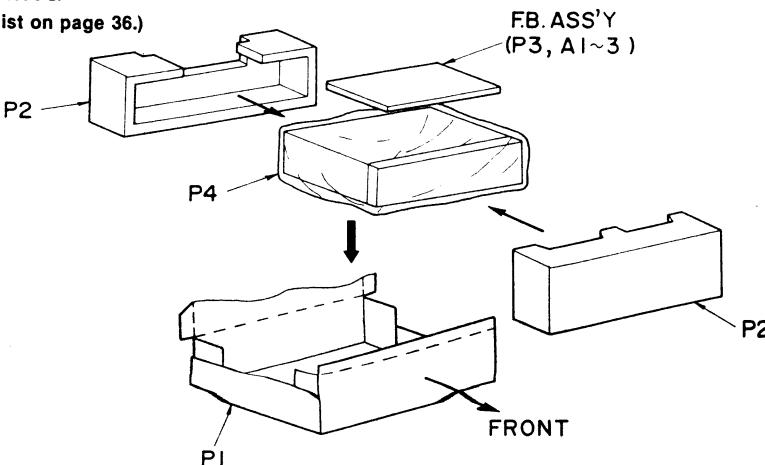
Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
			R304, 305	ERDS2TJ100T	1/4W 10	R602	ERDS2TJ472T	1/4W 4.7K
RESISTORS								
R1, 2	ERDS2TJ223T	1/4W 22K	R306	ERDS2TJ471T	1/4W 470	R603	ERDS2TJ103T	1/4W 10K
R3, 4	ERDS2TJ473T	1/4W 47K	R307	ERDS2TJ222T	1/4W 2.2K	R604	ERDS2TJ472T	1/4W 4.7K △
R5, 6	ERDS2TJ102T	1/4W 1K	R308	ERDS2TJ472T	1/4W 4.7K	R605	ERDS1FVJ150T	1/2W 15 (E, E5, EG)
R7, 8	ERDS2TJ225T	1/4W 2.2M	R311, 312	ERDS2TJ100T	1/4W 10			△
R9, 10	ERDS2TJ104T	1/4W 100K	R313, 314	ERDS2TJ154T	1/4W 150K	R605	ERD2FCVG150T	1/4W 15 (EB) △
R11, 12	ERDS2TJ183T	1/4W 18K	R315, 316	ERDS2TJ153T	1/4W 15K	R606	ERDS1FVJ100T	1/2W 10 (E, E5, EG)
R13, 14	ERDS2TJ101T	1/4W 100	R317	ERDS2TJ822T	1/4W 8.2K			△
R15, 16	ERDS2TJ820T	1/4W 82	R318	ERDS2TJ227T	1/4W 2.7K	R606	ERD2FCVG100T	1/4W 10 (EB) △
R17, 18	ERDS2TJ153T	1/4W 15K	R319	ERDS2TJ102T	1/4W 1K	R607, 608	ERDS2TJ102T	1/4W 1K
R19, 20	ERDS2TJ103T	1/4W 10K	R320	ERDS2TJ323T	1/4W 3.3K	R611, 612	ERDS1FVJ270T	1/2W 27 (E, E5, EG)
R21, 22	ERDS2TJ564T	1/4W 560K	R321	ERDS1FVJ561T	1/2W 560 (EB) △	R611, 612	ERD2FCVG270T	1/4W 27 (EB) △
R23, 24	ERDS2TJ682T	1/4W 6.8K	R322	ERDS2TJ563T	1/4W 56K	R613	ERDS2TJ222T	1/4W 2.2K △
R25, 26	ERDS2TJ223T	1/4W 22K	R323	ERDS2TJ103T	1/4W 10K	R614	ERDS2TJ222T	1/4W 2.2K
R27, 28	ERDS2TJ103T	1/4W 10K	R324	ERDS2TJ563T	1/4W 56K	R615	ERDS2TJ1R0T	1/4W 1.0 △
R29, 30	ERDS2TJ472T	1/4W 4.7K	R325-327	ERDS1FVJ561T	1/2W 560 (EB)	R616	ERDS2TJ391T	1/4W 390 △
R31, 32	ERDS2TJ392T	1/4W 3.9K	R401, 402	ERDS2TJ101T	1/4W 100	R617, 618	ERDS2TJ221T	1/4W 220 (EB)
R33, 34	ERDS2TJ102T	1/4W 1K	R403, 404	ERDS2TJ227T	1/4W 2.7K	R617, 618	ERDS2TJ560T	1/4W 56 (E, E5, EG)
R35, 36	ERDS2TJ820T	1/4W 82	R405, 406	ERDS2TJ103T	1/4W 10K	R619, 620	ERQ16NKR15E	1/6W 0.15 (EB) △
R39, 40	ERDS2TJ121T	1/4W 120	R407, 408	ERDS2TJ242	1/4W 2.4K	R623, 624	ERDS2TJ101T	1/4W 100 (EB)
R41, 42	ERDS2TJ392T	1/4W 3.9K	R409-412	ERDS2TJ684T	1/4W 680K	R625	ERDS2TJ181T	1/4W 180 (EB)
R43, 44	ERDS2TJ152T	1/4W 1.5K	R413, 414	ERDS2TJ562T	1/4W 5.6K	R626, 627	ERDS2TJ101T	1/4W 100 (EB)
R45, 46	ERDS2TJ227T	1/4W 2.7K	R415, 416	ERDS2TJ102T	1/4W 1K	R628	ERDS2TJ103T	1/4W 10K
R47, 48	ERDS2TJ104T	1/4W 100K	R417, 418	ERDS2TJ323T	1/4W 3.3K	R629	ERDS2TJ472T	1/4W 4.7K △
R49, 50	ERDS2TJ564T	1/4W 560K	R419, 420	ERDS2TJ333T	1/4W 33K	R630	ERD2FCVG100T	1/4W 10 (EB) △
R51-56	ERDS2TJ223T	1/4W 22K	R421-424	ERDS2TJ823T	1/4W 82K	R631-636	ERDS2TJ221T	1/4W 220 (EB)
R57, 58	ERDS2TJ153T	1/4W 15K	R425, 426	ERDS2TJ683T	1/4W 68K	R637, 638	ERDS2TJ391T	1/4W 390 △
R59, 60	ERDS2TJ182T	1/4W 1.8K	R427, 428	ERDS2TJ222T	1/4W 2.2K	R701	ERDS2TJ821T	1/4W 820
R61, 62	ERDS2TJ333T	1/4W 33K	R429, 430	ERDS2TJ512	1/4W 5.1K	R702	ERDS2TJ102T	1/4W 1K
R63, 64	ERDS2TJ472T	1/4W 4.7K	R431, 432	ERDS2TJ242	1/4W 2.4K	R703	ERDS2TJ122T	1/4W 1.2K
R65, 66	ERDS2TJ102T	1/4W 1K	R551, 552	ERDS2TJ104T	1/4W 100K	R704	ERDS2TJ152T	1/4W 1.5K
R67, 68	ERDS2TJ223T	1/4W 22K	R553, 554	ERDS2TJ563T	1/4W 56K	R705	ERDS2TJ182T	1/4W 1.8K
R69, 70	ERDS2TJ472T	1/4W 4.7K	R555, 556	ERDS2TJ104T	1/4W 100K	R706	ERDS2TJ222T	1/4W 2.2K
R71, 72	ERDS2TJ561T	1/4W 560	R557, 558	ERDS2TJ220T	1/4W 22	R707	ERDS2TJ332T	1/4W 3.3K
R201	ERJ6GEYJ333V	1/10W 33K	R559, 560	ERDS2TJ52T	1/4W 1.5K	R708	ERDS2TJ472T	1/4W 4.7K
R202	ERJ6GEYJ683V	1/10W 68K	R561	ERDS2TJ102T	1/4W 1K	R709	ERDS2TJ682T	1/4W 6.8K
R203-205	ERJ6GEYJ1R5T	1/10W 1.5	R562	ERDS2TJ471T	1/4W 470	R710	ERDS2TJ123T	1/4W 12K
R206	ERJ6GEYJ222V	1/8W 2.2K	R563, 564	ERDS2TJ103T	1/4W 10K	R711	ERDS2TJ223T	1/4W 22K
R207	ERJ6GEYJ182V	1/10W 1.8K	R565	ERDS2TJ105T	1/4W 1M	R712	ERDS2TJ382T	1/4W 820
R208	ERJ6GEYJ222V	1/10W 2.2K	R569, 570	ERDS2TJ101T	1/4W 100	R713	ERDS2TJ102T	1/4W 1K
R209-211	ERJ6GEYJ4R7V	1/10W 4.7	R571	ERDS2TJ152T	1/4W 1.5K	R714	ERDS2TJ122T	1/4W 1.2K
R212, 213	ERJ6GEYJ152V	1/10W 1.5K	R572	ERDS2TJ102T	1/4W 1K	R715	ERDS2TJ152T	1/4W 1.5K
R214	ERJ6GEYJ822V	1/10W 8.2K	R573	ERDS2TJ560T	1/4W 56	R716	ERDS2TJ182T	1/4W 1.8K
R215	ERJ6GEYJ101V	1/10W 100	R574	ERDS2TJ220T	1/4W 22	R717	ERDS2TJ181T	1/4W 180
R216	ERJ6GEYJ222V	1/8W 2.2K	R575	ERDS2TJ681T	1/4W 680	R718	ERDS2TJ331T	1/4W 330
R301	ERDS2TJ1R0T	1/4W 1.0	R576	ERDS2TJ681T	1/4W 680	R719, 720	ERDS2TJ180	1/4W 18
R302, 303	ERDS2TJ183T	1/4W 18K	R601	ERDS2TJ472T	1/4W 4.7K △	R721, 722	ERDS2TJ330T	1/4W 33

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R725, 726	ERDS2TJ102T	1/4W 1K	R958	ERDS2TJ103T	1/4W 10K	C39, 40	ECQ81H152JZ3	50V 1500P
R727, 728	ERDS2TJ332T	1/4W 3.3K	R959	ERDS2TJ152T	1/4W 1.5K	C41, 42	ECBT1H470J5	50V 47P
R901	ERDS2TJ105T	1/4W 1M	R960	ERDS2TJ472T	1/4W 4.7K	C43, 44	ECEAI1CK1008	16V 10U
R902	ERDS2TJ103T	1/4W 10K	R961	ERDS2TJ821T	1/4W 820	C45, 46	ECEAI1EK4R7B	25V 4.7U
R903	ERDS2TJ471T	1/4W 470	R962	ERDS2TJ183T	1/4W 18K	C47, 48	ECEAI1HN0108	50V 1U
R904	ERDS2TJ103T	1/4W 10K	R963	ERDS2TJ473T	1/4W 47K	C49, 50	ECEAI1CK1008	16V 10U
R905	ERDS2TJ182T	1/4W 1.8K	R964	ERDS2TJ392T	1/4W 3.9K	C51, 52	ECKT1H103ZF	50V 0.01U
R906	ERDS2TJ682T	1/4W 6.8K	R965	ERDS2TJ104T	1/4W 100K	C201	ECUV1E153MB	25V 0.015U
R907	ERDS2TJ103T	1/4W 10K	R970	ERDS2TJ222T	1/4W 2.2K	C202	ECUV1E104KB	25V 0.1U
R908	ERDS2TJ392T	1/4W 3.9K	R971	ERDS2TJ332T	1/4W 3.3K	C203, 204	ECEV1CA100R	16V 10U
R909	ERDS2TJ272T	1/4W 2.7K	R971A	ERDS2TJ271T	1/4W 270	C205, 206	ECUV1E104KB	25V 0.1U
R910	ERDS2TJ103T	1/4W 10K	R972	ERDS2TJ472T	1/4W 4.7K	C209-211	ECEV1EN4R7R	25V 4.7U
R911	ERDS2TJ392T	1/4W 3.9K	R972A	ERDS2TJ183T	1/4W 18K	C212-214	ECUV1H1032FN	50V 0.01U
R912	ERDS2TJ272T	1/4W 2.7K	R973	ERDS2TJ682T	1/4W 6.8K	C215	ECUV1H472KB	50V 4700P
R913	ERDS2TJ561T	1/4W 560	R973A	ERDS2TJ271T	1/4W 270	C216	ECUV1E1562KBN	25V 5600P
R914	ERDS2TJ102T	1/4W 1K	R974	ERDS2TJ123T	1/4W 12K	C217-219	ECUV1E104KB	25V 0.1U
R915	ERDS2TJ103T	1/4W 10K	R974A	ERDS2TJ183T	1/4W 18K	C301	ECP01L53JZ	100V 0.015U
R916	ERDS2TJ332T	1/4W 3.3K	R975	ERDS2TJ223T	1/4W 22K	C302	ECEAI1EK4R7B	25V 4.7U
R917, 918	ERDS2TJ103T	1/4W 10K	R977	ERDS2TJ223T	1/4W 22K △	C303	ECKT1H392KB	50V 3900P
R919, 920	ERDS2TJ232T	1/4W 22K	R978	ERDS2TJ473T	1/4W 47K	C304, 305	ECKT1H222KB	50V 2200P
R922	ERDS2TJ472T	1/4W 4.7K	R979	ERDS2TJ272T	1/4W 2.7K	C306	ECKT1H682KB	50V 6800P
R923	ERDS2TJ152T	1/4W 1.5K	R980	ERDS2TJ472T	1/4W 4.7K	C310	ECKT1H472KB	50V 4700P
R924	ERDS2TJ232T	1/4W 22K	R981	ERDS2TJ392T	1/4W 3.9K	C311	ECAIAU101B	10V 100U
R925	ERDS2TJ821T	1/4W 820	R982	ERDS2TJ223T	1/4W 22K	C312	ECKT1H032F	50V 0.01U
R926	ERDS2TJ232T	1/4W 22K	R983	ERDS2TJ103T	1/4W 10K	C313, 314	ECKT1H223ZF	50V 0.022U
R927	ERDS2TJ821T	1/4W 820	R984	ERDS2TJ472T	1/4W 4.7K (EB)	C315, 316	ECBT1H621KBS	50V 820P
R928	ERG1SJ150	1W 15	R985	ERDS2TJ222T	1/4W 2.2K (EB)	C317, 318	ECBT1H121KBS	50V 120P
R929	ERG1SJ180E	1W 18	R986	ERDS2TJ332T	1/4W 3.3K (EB)	C319, 320	ECQV1H563JZ3	50V 0.056U
R930	ERDS2TJ223T	1/4W 22K	R987	ERDS2TJ822T	1/4W 8.2K	C321, 322	ECQBV1H223JZ3	50V 0.022U
R931	ERDS2TJ821T	1/4W 820	R988	ERDS2TJ473T	1/4W 47K	C323, 324	ECQBV1H03JZ3	50V 0.01U
R932	ERDS2TJ103T	1/4W 10K (E, E5, EG)	R989	ERDS2TJ822T	1/4W 8.2K	C325, 326	ECKT1H222KB	50V 120P
R933	ERDS2TJ472T	1/4W 4.7K	R990	ERDS2TJ473T	1/4W 47K	C328	ECBT1H80J5	50V 18P
R935	ERDS2TJ682T	1/4W 6.8K				C329	ECEAI1EK1008	25V 10U
R936	ERDS2TJ232T	1/4W 22K				C330	ECKT1H032F	50V 0.01U △
R938	ERDS2TJ682T	1/4W 6.8K				C331	ECBT1H80J5	50V 18P
R939	ERDS2TJ232T	1/4W 22K				C401, 402	ECBT1H620KBS	50V 82P
R940, 941	ERDS2TJ562T	1/4W 5.6K				C403, 404	ECEAI1EN4R7B	25V 4.7U
R942	ERDS2TJ821T	1/4W 820				C5, 6	ECBT1H102KBS	50V 1000P
R943	ERDS2TJ232T	1/4W 22K				C407, 408	ECKT1H152KB	50V 1500P
R944, 945	ERDS2TJ180T	1/2W 18				C9, 10	ECEADU101B	6.3V 100U
R946	ERDS2TJ102T	1/4W 1K				C11, 12	ECQBV1H562JZ3	50V 5600P
R947, 948	ERDS2TJ103T	1/4W 10K				C13, 14	ECEAI1EK4R7B	25V 0.047U
R949	ERDS2TJ472T	1/4W 4.7K				C15, 16	ECBT1H01KBS	50V 100P
R950	ERDS2TJ821T	1/4W 820				C17, 18</td		

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
C555	ECKT1H103ZF	50V 0.01U	C619, 620	ECKT1H103ZF	50V 0.01U Δ
C556	ECEA1CK100B	16V 10U	C621	ECKT2H682PEL	500V 6800P Δ
C557	ECEA1EK4R7B	25V 4.7U	C701	ECKT1H223ZF	50V 0.022U
C558	ECEA1HMD10B	50V 1U	C702, 703	ECKT1H103ZF	50V 0.01U
C559-561	ECBT1C103NS5	16V 0.01U	C901	ECEAOJU222B	6.3V 2200U
C563, 564	ECEA0JK101B	6.3V 100U	C902	ECKT1H103ZF	50V 0.01U
C567	ECEA1VK100B	35V 10U	C903	ECEA1HMD10B	50V 1U
C568	ECEA1VK100B	35V 10U	C904	ECEA1EK4R7B	25V 4.7U
C601	ECKT2H682PEL	500V 6800P	C905	ECKT1H103ZF	50V 0.01U
C602, 603	ECEA1EU222E	25V 2200U Δ	C906	ECEA1CK100B	16V 10U
C604, 605	ECKT1H103ZF	50V 0.01U	C907	ECEA1HMD10B	50V 1U
C606, 607	ECEA1AU221B	10V 220U	C908	ECKT1H103ZF	50V 0.01U
C608, 609	ECKT1H103ZF	50V 0.01U	C909	ECKQ1H1B22JZ3	50V 8200P
C610, 611	ECEA1AU102B	10V 1000U	C910	ECEA1CK100B	16V 10U
C612	ECEA1EU222E	25V 2200U Δ	C911	ECKT1H470JS	50V 47P
C613	ECKT1H103ZF	50V 0.01U	C912	ECEA1HMD10B	50V 1U
C615	ECEA1EK100B	25V 10U	C913	ECKT1H103ZF	50V 0.01U
C617	ECEA1HM470B	50V 47U	C914	ECEA1EK4R7B	25V 4.7U
C618	ECKT1H103ZF	50V 0.01U	C915	ECEAOJU101B	6.3V 100U
C619, 620	ECKT1H103ZF	50V 0.01U Δ	C916	ECKT1H103ZF	50V 0.01U
C621	ECKT2H682PEL	500V 6800P Δ	C917	ECEA1HMD10B	50V 1U (EB)
C701	ECKT1H223ZF	50V 0.022U	C918	ECKT1H103ZF	50V 0.01U

■ PACKING

(Parts list on page 36.)

**Cassette Deck**
RS-B555
RS-B655
DEUTSCH**MESSUNGEN UND EINSTELL METHODEN****Tonkopf-Azimuteinstellung**

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Azimuteinstellung (8kHz, -20dB) ab. Drehen Sie die Azimuteinstellschraube so lange, bis die Abgaben des L-K und R-K den Höchstwert erreichen, und die Lissajossche Wellenfigur sich, wie abgebildet, 0 Grad nähert.

Anmerkung:

When L-K und R-K nicht auf demselben Punkt ihren Höchstwert erreichen, stellen Sie beide Kanäle auf den jeweiligen Höchstwert und gleichen dann aus.

2. Nehmen Sie denselben Einstellvorgang in der Wiedergabestellung vor.

Prüfung des Pegelunterschiedes bei Vorwärts- und Rückwärtsdrehung

3. Den Abschnitt für Verstärkungseinstellung (315Hz, 0dB) des Prüfbandes (QZZCFM) wiedergeben und sicherstellen, daß der Pegelunterschied bei Vorwärts- und Rückwärtsdrehung kleiner als 1dB ist.
4. Nach der Einstellung Schrauben-Sicherungsmittel an die Azimuth-Einstellschraube geben.

Einstellung der Wiedergabeverstärkungsregelung

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Einstellung der Verstärkungsregelung (315Hz, 0dB) ab.
2. Stellen Sie VR1 (L-K) [[VR2 (R-K)]] so ein, daß die Abgabe den Normwert erfüllt.

Wiedergabefrequenzaang

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für den Frequenzgang (315Hz, 12,5kHz~63Hz, -20dB) ab.
2. Achten Sie darauf, daß der Frequenzgang für beide Kanäle (L-K, R-K) in dem in Abb.5 gezeigten Bereich liegt.

Wechselstrom-Vormagnetisierungseinstellung

1. Das unbespielte Metalltestband (QZZCRZ) einlegen, und das Gerät auf Aufnahme schalten.
2. L1 (L-CH) (L2 (R-CH)) so einzustellen, daß die Ausgangsspannung zwischen TP1 (TP2) und GND geringer als der Minimalwert ist.

Service Manual

Supplement

Dolby NR-Equipped
Stereo Cassette Deck

Cassette Deck
RS-B655

Color
(K) ... Black Type



* HX Pro headroom extension originated by Bang Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.
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Please file and use this supplement manual together with the service manual for Model No. RS-B655, Order No. AD8907232C2.

Note:

- This supplement has been issued to correct an error in the "Replacement Parts List" on page 36.

DELETION

■ REPLACEMENT PARTS LIST (Page 36 of service manual.)

Note:

- Please remove the MECHANISM UNIT ASS'Y and the PRINTED CIRCUIT BOARD ASS'Y from the parts list because they are out of object in the replacement parts lists.

Ref. No.	Change of Part No.	Part Name & Description	Remarks
MECHANISM UNIT			
MECH1	RAA0802	MECHANISM ASS'Y	Deletion
PRINTED CIRCUIT BOARDS			
PWB1 (E, E5, EG)	REP0306A	MAIN P.C.B. ASS'Y	Deletion
PWB1 (EB)	REP0306B	MAIN P.C.B. ASS'Y	Deletion
PWB2	REP0307A	SUB P.C.B. ASS'Y	Deletion

Gesamtfrequenzgang

- Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme/Pause-Betrieb.
- Geben Sie über einen Lautstärkeregler ein Bezugseingabesignal (1kHz, -24dB) ein.
- Stellen Sie das Signal auf 20dB und justieren die Frequenz von 50Hz~10kHz.
- Nehmen Sie das Wobbel signal auf.
- Geben Sie das aufgenommene Signal wieder und achten darauf, daß dieses sich im Vergleich zur Bazugsfrequenz (1kHz) in dem in Abb. 8 aufgezeichneten Bereich befindet.
- Sollte das Signal nicht im Normbereich liegen, justieren Sie VR301 (L-K) und VR302 (R-K), so daß der Frequenzpegel mit der Norm übereinstimmt.
- Wiederholen Sie die Schritte 2~6 und verwenden das CrO₂-Band (QZZCRX) und das Metallband (QZZCRZ). Der Frequenzbereich wird auf 12.5kHz (50Hz~12.5kHz) angehoben.
- Achten Sie darauf, daß sich der Frequenzpegel in dem in Abb. 9 aufgezeigten Bereich befindet.

Einstellung der Gesamtverstärkungsregelung

- Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme/Betrieb.
- Legen Sie ein Bezugseingabesignal (1kHz, -24dB) an. Stellen Sie das Ausgangssignal auf einen Pegel von 0.4V ein.
- Nehmen Sie das Eingabesignal auf.
- Geben Sie das in Schritt 3 oben aufgenommene Signal wieder und achten Sie darauf, daß das Ausgangssignal mit dem Normwert übereinstimmt.
- Sollte der Wert nicht innerhalb der Norm liegen, justieren Sie VR3 (L-K) und VR4 (R-K).
- Wiederholen Sie die Schritte 2~5 von oben so lange, bis das Ausgangssignal im Normbereich liegt.

Technics

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FRANÇAIS

METHODES DES MEASURES ET REGLAGES

Réglage Azimutal de la tête

- Faire jouer la portion du réglage de l'azimuth (8kHz, -20dB) de la bande d'essai (QZZCFM). Ajuster la vis de la mise au point azimutale jusqu'à ce que les sorties du canal de gauche et du canal de droite soient maximisées et que la forme d'onde de Lissajous, comme il est illustré, approche de 0 degré.

Nota:

Si le canal de gauche et canal de droite ne sont pas maximisés au même point, régler le point où les niveaux de chaque canal sont maximisés et égaux.

- Effectuer le même réglage sur le mode d'audition.

Vérification de la différence de niveau pour les deux sens de rotation

- Introduire une bande métal vierge prévue pour les essais (QZZCPZ) et vérifier que la différence de niveau pour les deux sens de rotation est inférieure à 1dB.
- Après cela, mettre une goutte de vernis de blocage sur la vis de réglage de l'azimuth.

Réglage de L'amplification de Lecture

- Faire jouer la partie réglée de l'amplification (315Hz, 0dB) de la bande d'essai (QZZCFM).
- Régler la platine 1: VR1 (canal de gauche) [[VR2 (canal de droite)]] de telle sorte que la sortie soit en deçà de la valeur standard.

Réponse en Fréquence de la Lecture

- Faire jouer la partie de la réponse en fréquence (315Hz, 12.5kHz, -63Hz, -20dB) de la bande d'essai (QZZCFM).
- S'assurer que la réponse en fréquence soit en deçà de la plage montrée dans la Fig. 5, à la fois pour le canal de gauche et le canal de droite.

Réglage du bouchon de polarisation

- Introduire la cassette d'essai vierge (QZZCRZ) et régler l'appareil pour l'enregistrement.
- Régler L1 (L-CH) et (L2 (R-CH) de sorte que la tension entre TP1 (TP2) et la masse (GND) soit inférieure à la valeur minimale.

Réponse en Fréquence Totale

- Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
- Appliquer un signal d'entrée de référence (1kHz, -24dB) par l'intermédiaire d'un atténuateur.
- Diminuer le signal de 20dB et régler la fréquence de 50Hz~10kHz.
- Enregistrer le balayage de fréquence.
- Après cela, mettre une goutte de vernis de blocage sur la vis de réglage de l'azimuth.
- S'il n'est pas en deçà de la plage standard, régler VR301 (canal de gauche) et VR302 (canal de droite) de telle sorte que le niveau de fréquence soit en deçà de la plage standard.
- Répéter les étapes 2~6 ci-dessus en utilisant la band CrO₂ (QZZCRX) et la bande métallisée (QZZCRZ) en augmentant la plage de fréquence à 12.5kHz (50Hz~12.5kHz).
- S'assurer que le niveau soit en deçà de la plage montrée à la Fig. 9.

Réglage de L'amplification Totale

- Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
- Appliquer un signal d'entrée de référence (1kHz, -24dB). Diminuer la sortie de telle sorte que son niveau devienne de 0.4V.
- Enregistrer ce signal d'entrée.
- Faire jouer le signal enregistré à l'étape 3 ci-dessus, et s'assurer que la sortie en deçà de la valeur standard.
- Si elle n'est pas en deçà de la valeur standard, régler VR3 (canal de gauche) et VR4 (canal de droite).
- Répéter les étapes 2~5 ci-dessus jusqu'à ce que la sortie soit en deçà de la valeur standard.

ESPAÑOL

METODOS DE AJUSTE Y MEDIDA

Ajuste Azimutal de Cabeza

1. Reproducir la porción de ajuste azimutal (8kHz, -20dB) de la cinta de prueba (QZZCFM). Variar el tornillo de ajuste azimutal hasta que las salidas del CH-I y CH-D se maximicen y forma de onda de lissajous, como ilustrado, se acerque a grado 0.

Nota:

- Si CH-I y CH-D no son maximizados en el mismo punto, ajustar al punto donde los niveles de cada canal sean maximizados e igualados.
2. Efectuar el mismo ajuste en la modalidad de reproducción.

Comprobación de la diferencia de nivel de giro hacia adelante y hacia atrás

3. Reproduzca la parte del ajuste de ganancia (315Hz, 0dB) de la cinta de prueba (QZZCFM) y luego asegúrese de que la diferencia de nivel de giro hacia adelante y hacia atrás sea menor que 1dB.
4. Despues del ajuste, aplique pintura de fijación al tornillo de ajuste del azimut.

Ajuste de Ganancia de Reproducción

1. Reproducir la porción ajustada de ganancia (315Hz, 0dB) de la cinta de prueba (QZZCFM).
2. Ajustar la Platina 1: VR1 (CH-I) [[VR2 (CH-D)]] de manera que la salida esté dentro del valor estándar.

Respuesta de Frecuencia de Reproducción

1. Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12.5kHz~63Hz, -20dB) de la cinta de prueba (QZZCFM).
2. Asegurarse de que la respuesta de frecuencia esté dentro de la gama mostrada en la Fig. 5 para ambos CH-I y CH-D.

Ajuste del Circuito Trampa de Polarizacion

1. Introduzca la cinta virgen de metal (QZZCRZ) para pruebas y ponga el aparato en el modo de grabación.
2. Ajuste L1 (canal izq.) ((L2 (canal der.)) de manera que la tensión de salida entre TP1 (TP2) y GND (Tierra) sea menor que el valor mínimo.

Respuesta de Frecuencia Total

1. Poner una cinta virgen normal (QZZCRA) y poner la unidad en la modalidad de Pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1kHz, -24dB) a través de un atenuador.
3. Atenuar la señal por 20dB y ajustar la frecuencia de 50Hz~10kHz.
4. Grabar el barrido de frecuencia.
5. Reproducir la señal grabada y asegurarse de que esté dentro de la gama mostrada en la Fig. 8 en comparación con la frecuencia de referencia (1kHz).
6. Si no está dentro de la gama de frecuencia, ajustar VR301 (CH-I) y VR302 (CH-D) de manera que el nivel de frecuencia esté dentro de la gama estándar.
7. Repetir los pasos 2~6 de arriba utilizando la cinta CrO₂ (QZZCRX) y la cinta metálica (QZZCRZ) incrementando la gama de frecuencia a 12.5kHz (50Hz~12.5kHz).
8. Asegurarse de que el nivel esté dentro de la gama mostrada en la Fig. 9.

Ajuste de Ganancia Total

1. Insertar la cinta de prueba en blanco normal (QZZCRA) y poner la unidad en modalidad de pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1kHz, -24dB). Atenuar la salida de manera que su nivel se haga 0.4V.
3. Grabar la señal de entrada.
4. Reproducir la señal grabada en el paso 3 de arriba y asegurarse de que la salida esté dentro del valor estándar.
5. Si no está dentro del valor estándar, ajustar VR3 (CH-I) y VR4 (CH-D).
6. Repetir el paso 2~5 de arriba hasta que la salida esté dentro del valor estándar.